

1044b UIC - EAST POPLAR OIL FIELD
ENFORCEMENT CASE SDWA 1431
Folder ID: 13615 1983 Privileged

Release in full.



Region 8



13615

HISTORY

1.1



Poor Quality Source Document

The following document
images have been
scanned from the best
available source copy.

To view the actual hard copy,
contact the Region VIII Records
Center at (303) 312-6473.

PRODUCTION DEPT.
FILE COPY

LAST POSTAL UNIT WELL NO. 101
ROOSEVELT COUNTY, MONTANA
TERMINAL CORPORATION - OPERATOR

PRODUCTION DEPT.
FILE COPY

WELL HISTORY

EAST POPIAR UNIT WELL NO. 101

70

EAST FOPLAR UNIT WELL NO. 101

ROOSEVELT COUNTY, MONTANA

MURPHY CORPORATION - OPERATOR

HISTORY	Page 1
COMPLETION DATA	2
SURFACE EQUIPMENT	3
SUB-SURFACE EQUIPMENT	4
ELECTRO LOG DATA	5
DRILL STEM TESTS	6
MUD PROGRAM SUMMARY	7
DRILLING BIT & TOTCO RECORD & DIAMOND CORE BIT RECORD	8
FUTURE POSSIBLE PRODUCTING INTERVALS	9
SAMPLE DESCRIPTIONS	10
CORE DESCRIPTIONS	11
CORE ANALYSIS REPORT	12

EAST POPLAR UNIT WELL NO. 101

SUMMARY OF WELL HISTORY

WELL NAME AND NUMBER: East Poplar Unit Well No. 101

LOCATION: C NW 1/4 Section 14, T28N, R51E

DRILLING UNIT: 160 acres

WORKING INTEREST: 31.448470 %

REVENUE INTEREST: 31.448470 %

ELEVATION: 2171' Ground - 2161' K.B.

WELL HEAD MARKER: RKB to top of flange on 9-5/8" x 5-1/2" Cameron Casing Head - 8.50'

DRILLING CONTRACTOR: Zach Brooks Drilling Company

SFUDDED: 3:30 A.M., October 21, 1957

DRILLING RIG RELEASED: 3:00 P.M., November 28, 1957

COMPLETION CONTRACTOR: Western Oil Well Service Company

COMPLETED: December 7, 1957

TOTAL DEPTH: 6248' Driller = 6255' Schlumberger

CASING: 9-5/8" at 1088.33' with 400 sacks cement
5-1/2" at 6255.00' with 200 sacks cement

INITIAL PRODUCTION INTERVAL: Perforated "C-5" Zone 5891'-5896' with Lane Wells Karat-free casing gun, 4 holes per foot.

TUBING: 2-3/8" at 5895.06'

INITIAL POTENTIAL: Flowed 268 BFPD, .2 of 1 1/2" BS&W, 7/64" choke.

INITIAL ACID TREATMENT: "C-5" Zone (5891'-5896') with 500 gallons Dowell etching acid.

INITIAL FRAC TREATMENT: None

PERFORATIONS: Fast Zone 6173'-6181' (Squeezed)
Fast Zone 6110'-6120' & 6094'-6104' (Squeezed)
Madison "C" Zone 5904'-5914' (Squeezed)
"C-5" Zone 5891'-5896'

3160
I37IND12878

Murphy Exploration & Production Company
Indian Lease I37-IND-12878
East Poplar Unit Well No. 101
SW NW Sec. 14, T28N-R51E
Roosevelt County, Montana

CONDITIONS OF APPROVAL

1. The CIBP at 5840 feet must be capped with a minimum of 35 feet of cement (if placed by dump bailer).
2. A Subsequent Report on Form 3160-5 must be submitted to this office within 30 days following recompletion of the well. This report must include the perforated interval and the new production information for the Heath formation (BOPD, MCFD, BWPD and any H2S present in the associated gas).
3. If the well is productive in the Heath formation a request for a paying well determination will have to be submitted to our BLM state office. If this is determined to be a paying well for unit purposes an application for a new participating area will then have to be submitted to our BLM state office.

Kingfisher, deceased, Fort Leck
Form 5-154b Allottee No. 450
(November 1947)

Contract No. I-37ind-12878

UNITED STATES

Probate No. 23028-20 S.J.C.
228-39; 2215-47

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

206 60798

OIL AND GAS MINING LEASE—ALLOTTED INDIAN LANDS

Assiniboine-Sioux TRIBE, STATE OF Montana

THIS INDENTURE OF LEASE, made and entered into in quintuplicate this 27th day of February, 1950, by and between (Single)(129); Kate P. Redbear and Thomas Redbear(3589)(340) wife and husband; Alice Foote(Single)(2001); Mabel F. Bighorn and Jacob Bighorn(2446)(1762) wife and husband; Agnes S. Steele and William Steele(2015) wife and husband; Trivian M. Graves-minor(G-215); Austin S. Buckles and Audrey M. Buckles(2295) husband and wife (G-215) of No's (359)(3589)(2001)(2488) Brockton, Montana; No's (129)(2295) Poplar, Montana of No. (2015) Portland, Ore., State of

allottee No. 480
(roll No. 129), of the Sioux Tribe of Indians, designated herein as lessor, and O. H. Murphy Jr.

of El Dorado, State of Arkansas herein designated as lessee:

WITNESSETH

1. Lessor, in consideration of a cash bonus of \$ 3795.20 paid to the Superintendent of the Indian Agency having jurisdiction, hereinafter called the superintendent, receipt of which is hereby acknowledged, and in consideration of rents and royalties to be paid, and the covenants to be observed as herein set forth, does hereby grant and lease to the lessee the exclusive right and privilege to drill for, mine, extract, remove, and dispose of all the oil and natural gas deposits in or under the following described tracts of land situated in the county of Roosevelt State of Montana and more particularly described as follows:

Township 26 North, Range 51 East N.P.M. Sec. 14 - 1/2

containing 320 acres more or less, together with the right to construct and maintain thereupon all works, buildings, plants, waterways, roads, telegraph and telephone lines, pipe lines, reservoirs, tanks, pumping stations, or other structures necessary to the full enjoyment hereof for the term of 10 years from and after the approval hereof by the Secretary of the Interior and as much longer thereafter as oil and/or gas is produced in paying quantities from said land.

2. The term "oil and gas supervisor" as employed herein shall refer to such officer or officers as the Secretary of the Interior may designate to supervise oil and gas operations on Indian lands. The term "superintendent" as used herein shall refer to the superintendent or other official in charge of the Indian Agency having jurisdiction over the lands leased.

3. In consideration of the foregoing, the lessee hereby agrees:

(a) Bond.—To furnish such bond as may be required by the regulations of the Secretary of the Interior, with satisfactory surety, or United States bonds as surety therefor, conditioned upon compliance with the terms of this lease.

(b) Wells.—(1) To drill and produce all wells necessary to offset or protect the leased land from drainage by wells on adjoining lands not the property of the lessor, or in lieu thereof, to compensate the lessor in full each month for the estimated loss of royalty through drainage: Provided, That during the period of supervision by the Secretary of the Interior, the necessity for offset wells shall be determined by the oil and gas supervisor and payment in lieu of drilling and production shall be with the consent of, and in an amount determined by the Secretary of the Interior; (2) At the election of the lessee to drill and produce other wells: Provided, That the right to drill and produce such other wells shall be subject to any system of well spacing or production allotments authorized and approved under applicable law or regulations, approved by the Secretary of the Interior and affecting the field or area in which the leased lands are situated; and (3) If the lessee elects not to drill and produce such other wells for any period the Secretary of the Interior may, within 10 days after due notice in writing, either require the drilling and production of such wells to the number necessary, in his opinion, to insure reasonable diligence in the development and operation of the property, or may in lieu of such additional diligent drilling and production require the payment on and after the first anniversary date of this lease of not to exceed \$1 per acre per annum, which sum shall be in addition to any rental or royalty hereinafter specified.

7. Removal of buildings, improvements, and equipment.—Lessee shall be the owner of and shall have the right to remove from the leased premises, within 90 days after termination of this lease, any and all buildings, structures, casing, material, and/or equipment placed thereon for the purpose of development and operation hereunder, save and except casing in wells and other material, equipment, and structures necessary for the continued operation of wells producing or capable of being produced in paying quantities as determined by the Secretary of the Interior, on said leased land at the time of surrender of this lease or termination thereof; and except as otherwise provided herein, all casing in wells, material, structures, and equipment shall be and become the property of the lessor.

8. Relinquishment of supervision by the Secretary of the Interior.—Should the Secretary of the Interior, at any time during the life of this instrument, relinquish supervision as to all or part of the acreage covered hereby, such relinquishment shall not bind lessee until said Secretary shall have given 30 days written notice. Until said requirements are fulfilled, lessee shall continue to make all payments due hereunder as provided in section 3 (c). After notice of relinquishment has been received by lessee, as herein provided, this lease shall be subject to the following further conditions:

(a) All rentals and royalties thereafter accruing shall be paid in the following manner: Rentals and royalties shall be paid directly to lessor or his successors in title, or to a trustee appointed under the provisions of section 9 hereof.

(b) If, at the time supervision is relinquished by the Secretary of the Interior, lessee shall have made all payments then due hereunder, and shall have fully performed all obligations on its part to be performed up to the time of such relinquishment, then the bond given to secure the performance hereof, on file in the Indian Office, shall be of no further force or effect.

(c) Should such relinquishment affect only part of the acreage, then lessee may continue to drill and operate the land covered hereby as an entirety: *Provided*, That lessee shall pay in the manner prescribed by section 3 (c), for the benefit of lessor such proportion of all rentals and royalties due hereunder as the acreage retained under the supervision of the Secretary of the Interior bears to the entire acreage of the lease, the remainder of such rentals and royalties to be paid directly to lessor or his successors in title or said trustee as the case may be, as provided in subdivision (a) of this section.

9. Division of fee.—It is covenanted and agreed that should the fee of said land be divided into separate parcels, held by different owners, or should the rental or royalty interests hereunder be so divided in ownership, after the execution of this lease and after the Secretary of the Interior relinquishes supervision hereof, the obligations of lessee hereunder shall not be added to or changed in any manner whatsoever save as specifically provided by the terms of this lease. Notwithstanding such separate ownership, lessee may continue to drill and operate said premises as an entirety: *Provided*, That each separate owner shall receive such proportion of all rentals and royalties accruing after the vesting of his title as the acreage of the fee, or rental or royalty interest, bears to the entire acreage covered by the lease; or to the entire rental and royalty interest as the case may be: *Provided further*, That if, at any time after departmental supervision hereof is relinquished, in whole or in part, there shall be four or more parties entitled to rentals or royalties hereunder, whether said parties are so entitled by virtue of undivided interests or by virtue of ownership of separate parcels of the land covered hereby, lessee, at his election may withhold the payment of further rentals or royalties (except as to the portion due the Indian lessor while under restriction), until all of said parties shall agree upon and designate in writing and in a recordable instrument a trustee to receive all payments due hereunder on behalf of said parties and their respective successors in title. Payments to said trustee shall constitute lawful payments hereunder, and the sole risk of an improper or unlawful distribution of said funds by said trustee shall rest upon the parties naming said trustee and their respective successors in title.

10. Drilling and producing restrictions.—It is covenanted and agreed that the Secretary of the Interior may impose restrictions as to time or times for the drilling of wells and as to the production from any well or wells drilled when in his judgment such action may be necessary or proper for the protection of the natural resources of the leased land and the interests of the Indian lessor, and in the exercise of his judgment the Secretary may take into consideration, among other things, Federal laws, State laws, or regulations by competent Federal or State authorities or lawful agreements among operators regulating either drilling or production, or both.

11. Unit operation.—The parties hereto agree to subscribe to and abide by any agreement for the cooperative or unit development of the field or area, affecting the leased lands, or any pool thereof, if and when collectively adopted by a majority operating interest therein and approved by the Secretary of the Interior, during the period of supervision.

12. Helium—public emergency.—It is covenanted and agreed that helium gas, carbon dioxide gas, and all other natural gases are included under the term "gas" as used in this lease, and in the event gas is discovered containing helium the United States Government shall have the right to purchase, at reasonable prices, all or any part of the production and to regulate the amount and manner of production; and in time of war or other public emergency, the United States Government shall have the option to purchase all or any part of the products produced under this lease.

13. Conservation.—The lessee in consideration of the rights herein granted agrees to abide by the provisions of any act of Congress, or any order or regulation prescribed pursuant thereto, relating to the conservation, production, or marketing of oil, gas, or other hydrocarbon substances.

14. Heirs and successors in interest.—It is further covenanted and agreed that each obligation hereunder shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors of, or assigns of the respective parties hereto.

IN WITNESS WHEREOF, the said parties have hereunto subscribed their names and affixed their seals on the day and year first above mentioned.

Two witnesses to execution by lessor:

P. O. _____

P. O. _____

_____[SEAL]

_____[SEAL]

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

East Poplar Unit H Battery and Wells EPU Nos. 22, 32, 55, 101, & 104

The East Poplar Unit H Battery and the wells producing into the battery, EPU Nos. 22, 32, 55, 101, & 104, are onshore production facilities located in Roosevelt County, Montana, in the East Poplar Unit Oil Field. The field is about 6 miles North-east of Poplar, Montana, in Townships 28 and 29 North and Ranges 50 and 51 East.

The operator of the East Poplar Unit H Lease is Murphy Oil Corporation located at P. O. Box 547, Poplar, Montana 59255. The corporate headquarters are at 200 Jefferson Avenue, El Dorado, Arkansas, 71730.

The battery consists of a 8' x 27' vertical separator, a circulating pump with appropriate lines, and two 300 barrel steel welded tanks. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks. An earthen pit of about 8,000 barrels capacity is located at the tank battery into which the separator or tanks may be emptied if needed for fluid storage.

All five wells flow and do not need well cellars or overflow pits.

The field flow lines and the well casing of each well are cathodically protected. The equipment is in excellent operating condition and there is no reasonable likelihood of a discharge or spill event.

The facilities are about 3.0 miles from Poplar River. The terrain dips gently West. The soil is sandy and the fields are under cultivation. Because of the distance to the river, the type of soil, and the terrain the 8,000 barrel pit at the tank battery is sufficient secondary containment for these facilities.

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

East Poplar Unit H Battery and Wells EPU Nos. 22, 32, 55, 101, & 104

The East Poplar Unit H Battery and the wells producing into the battery, EPU 22, 32, 55, 101, & 104, are onshore production facilities located in Roosevelt County, Montana, in the East Poplar Unit Oil Field. The battery consists of a 8' x 27' vertical separator, a circulating pump with appropriate lines, and two 300 barrel welded steel tanks. An earthen pit of about 8,000 barrel capacity is located at the tank battery into which the separator or tanks may be emptied if needed for fluid storage.

The field is about 6 miles Northeast of Poplar, Montana, in Townships 28 and 29 North and Ranges 50 and 51 East.

The operator of the East Poplar Unit H Lease is Murphy Oil Corporation located at P.O. Box 547, Poplar, Montana 59255. The corporation headquarters are at 200 Jefferson Avenue, El Dorado, Arkansas 71730.

The foreman, Mr. Gerald Hagadone, is responsible for oil spill prevention at this facility. On each trip to the lease the pumper makes a visual inspection of all facilities and reports any malfunction to the foreman, Mr. Gerald Hagadone, and notes this malfunction on the ten day gauge report. There has been no reportable oil Spill Event during the twelve months prior to January 10, 1974.

The equipment is in excellent operating condition and there is no reasonable likelihood of a discharge or spill event.

The field flow lines and well casing of each well are cathodically protected.

Personnel are properly instructed in the operation and maintenance of equipment to prevent oil discharges, and applicable pollution control laws, rules and regulations. Each employee is given these instructions by the field foreman when they are employed. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. The procedures are reviewed every six months by the field foreman with each employee. When changes occur in procedures, each employee is informed.

Fluid in the 8,000 barrel storage pit is pumped to the salt water disposal unit if the water is brackish as determined by chloride tests. If only fresh water is contained in the pit it is disposed of by placing on lease roads to control dust and compact the roads. Any oil in the pit is pumped back through the separator with the water being sent to the disposal well. Oil skims are burned by state permits. There are no outlets from the storage pit and all fluids must be pumped out.

The two 300 barrel tanks are steel and are welded construction. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks.

All five wells flow and do not need well cellars or overflow pits.

The facilities are about 3.0 miles from the Poplar River. The terrain dips gently West. The soil is sandy and the fields are under cultivation. Because of the distance to the river, the type of soil, and the terrain the 8,000 barrel pit at the tank battery is sufficient secondary containment for these facilities.

The tanks are observed daily by the pumper. Periodically, the foreman checks the entire tank battery and producing wells closely. If any trouble is suspected, the facility is shut down, the tanks and/or separator are emptied and cleaned. The facility is then thoroughly inspected by service company personnel, repairs are made if needed and the unit is placed back into service.

Produced salt water is pumped to a field gathering system for injection into a salt water disposal well. The above ground facilities are observed daily by the pumper and inspected by the foreman closely on his visits to the lease.

All salt water disposal flowlines are cement asbestos lines. These lines are buried and the surface is observed daily by the pumper.

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature _____

Name _____

Title _____

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

Printed Name Of Registered Professional Engineer

(Seal)

Signature Of Registered Professional Engineer

Date _____

Registration No. _____ State _____

Contingency Plans For An Oil Discharge

East Poplar Unit H Battery and Wells EPU Nos. 22, 32, 55, 101, & 104

The field is visited twice daily by the pumper. Visual inspection is made on each facility on each visit to determine if any malfunction is occurring. The most likely potential oil discharges are checked thoroughly. Periodically, the field foreman, Mr. Gerald Hagadone, will conduct a close check of the entire facility.

The pumpers, Mr. Ferdinand Charette and Mr. Robert Atkinson, have been instructed in the operations and maintenance of equipment to prevent oil and water discharges and informed of the applicable pollution control laws, rules and regulations. If an oil discharge occurs, the pumper will immediately close the proper valves and/or shut down the production facility to stop the discharge. He will then call Mr. Gerald Hagadone who will in turn inform Mr. Bill Brown, District Superintendent. If needed, the proper state and federal agencies will be notified by Mr. Brown. The discharged oil will be reclaimed or disposed of by approved engineering procedures and in accordance to law.

In the event discharged oil collects on standing water such as a stock pond or rain water standing in a low spot, the oil will be pumped into a tank truck. The skim of oil left on the water will be removed by an oil skimmer owned by Murphy Oil Corporation. The skimmer can be towed to the field within an hours time.

If the discharge is in excess of 50 barrels of oil, the Montana Department of Health and Environmental Sciences in Helena will be notified by Mr. Brown.

If a Spill Event occurs as defined by federal law, the Environmental Protection Agency in Denver, Colorado will be notified by Mr. Brown.

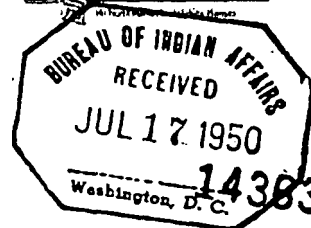
Telephone numbers and personnel to be notified in case of an oil discharge are as follows:

Phone Numbers as listed on other copies will be included on final copy.

Form 36—(Okla. & Kans.)

KANSAS BLUE PRINT CO.

Affidavit of Identity



State of Montana }
County of Roosevelt } ss.

E. J. Diehl

Supt. Fort Peck Indian Agency

, being first duly sworn on his oath, states

that he is familiar with the following described property, to-wit:

W₁

of Section 14 Township 28 North Range 51 East and containing 320 acres, more or less

situated in the County of Roosevelt State of Montana
Mary Foote, Maude F. Buckles, Kate F. Redbear, Mabel F. Bighorn,
Agnes S. Steele, Trivian M. Graves, and
and that he is also familiar with Austin S. Buckles, who on

the _____ day of _____, 19 50, executed a oil lease in favor

of C. H. Murphy Jr., which instrument appears of record in Book _____, at

page _____ of the records of the county aforesaid; that he knows of his own knowledge that, not-

Mary Foote, Maude F. Buckles, Kate F. Redbear, Mabel F. Bighorn, Agnes S. Steele, Trivian M. Graves, and
withstanding the discrepancy in name, the said Austin S. Buckles who executed
Mary W. Foote, Maude Buckles, Kate Redbear, Mabel Foote, Agnes Steele, Trivian Earle Graves,
the said instrument, are one and the same person as and Austin Scott, the then

heirs to a trust patent issued
record owner of the property by virtue of being the owner of the property on the 17th day of

December, 19 13, covering the aforesaid property, which deed is of record in Book

_____, at page _____, of the records of the county aforesaid.

Further affiant saith not.

Subscribed and sworn to before me this 24th day of MAY, 19 52.

E. J. Diehl

John H. Howell

Notary Public.

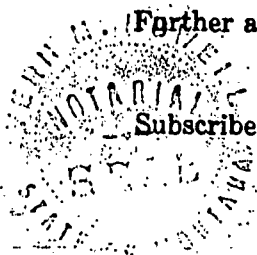
Notary Public for the State of Montana
Residing at Caplan, Mont.

My commission expires 6 day of June, 19 58

My commission expires _____

ACKNOWLEDGMENT

(Oklahoma or Kansas)



STATE OF MONTANA

County of Roosevelt

88.

On this 13 day of February in the year nineteen hundred and fifty before me R. E. Lang a Notary Public for the State of Montana, personally appeared Mary Foote, Maude F. Buckles, Kate F. Redbear and Thomas Redbear, Alice Foote, Mabel F. Bighorn and Jacob Bighorn, E. J. Diehl, Austin R. Buckles and Audrey M. Buckles

known to me (or proved to me on oath of _____)

to be the person whose name are subscribed to the within instrument and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal the day and year first above written.

R. E. Lang
Notary Public for the State of Montana.

Residing at Poplar, Montana

My Commission expires April 17, 1950

STATE OF ~~MONTANA~~ OregonCounty of Multnomah

88.

On this 27th day of February in the year nineteen hundred and _____ before me _____ a Notary Public for the State of ~~Montana~~ Oregon, personally appeared Agnes S. and William Steele

known to me (or proved to me on oath of _____)

to be the person whose name _____ subscribed to the within instrument and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal the day and year first above written.

Harry Winkler
Notary Public for the State of ~~Montana~~ Oregon

Residing at 136 N W 6th Portland

My Commission expires January 31, 1953

Two witnesses to execution by lessor:

(hermark)

James H. M. Clumney
P.O. Poplar, Montana
David L. Ott
215
P.O. E. Bayard - Denver, Colorado

Mary Foote
Maudie F. Buckles
Maudie F. Buckles
Kate F. Redbear
Kate F. Redbear
Thomas Redbear
Thomas Redbear

Alice Foote
Alice Foote
Mabel F. Bighorn
Mabel F. Bighorn

Jacob Bighorn
Jacob Bighorn

Agnes S. Steele
Agnes S. Steele

William Steele
William Steele

Trivian M. Graves (minor)
Trivian M. Graves (minor) Supt.

Austin R. Buckles
Austin R. Buckles

Audrey M. Buckles
Audrey M. Buckles

Two witnesses to execution by lessor
to-wit Agnes S. and William Steele:

Ellsworth R. Taylor
P.O. 3816 N.W. Graham
Audrey Alvray Taylor
P.O. 3816 N.W. Graham St.

W A I V E R

Kingfisher, deceased, Fort Peck allottee No. 480
 Probate No's. 29028-20; 228-39; 8215-47

I, Mary W. Foote, Fort Peck allottee No. 339, heir and dower, waive
 all dower rights in that portion of the Oil and Gas rights inherited
 by Maude F. Buckles; Kate F. Redbear; Alice Foote; Mabel F. Bighorn;
 Agnes S. Steeles; Austin R. Buckles; and Trivian Marie Graves, a minor,
 in the W/2 Sec. 14 T-28N., R-31E.M.M., containing 320 acres, more or
 less, retaining to myself only my inherited 1/3 interest in said Oil
 and Gas rights.

Her

David Buckles
 Witness

Mary W. Foote Mark

Austin Buckles
 Witness

Subscribed and sworn before me this 8th day of November, 1930

Oliver M. Lien

Notary Public for the State of Mont.
 Residing at Brookton, Montana. My
 Commission expires June 14, 1932.

APPROVED

John W. Johnson
 John W. Johnson
 Acting Superintendent

Fort Peck Agency
Peplar, Montana

November 6, 1950

This is to certify that Mary W. Foote, original
allottee No. 339, and Mary Foote, allottee No. 539, are one and
the same person.

John W. Johnson,
Acting Superintendent

206 60798

Fort Peck Agency
Poplar, Montana

November 6, 1950

This is to certify that Maude Buckles, original
allottee No. 189, and Maude F. Buckles, allottee No. 189, are
one and the same person.

John W. Johnson,
Acting Superintendent

206 60798

Fort Peck Agency
Poplar, Montana

November 6, 1950

This is to certify that Kate Redbear, original
allottee No. 340, and Kate Redbear, allottee No. 340, are
one and the same person.

John W. Johnson,
Acting Superintendent

206 60798

Fort Peck Agency
Poplar, Montana

November 6, 1950

This is to certify that Mabel Foote, original
allottee No. 2448, and Mabel F. Eighorn, allottee No. 2449,
are one and the same person.

John W. Johnson,
Acting Superintendent

206 60798

Fort Peck Agency
Poplar, Montana

November 6, 1950

This is to certify that Agnes Steele, original
allottee No. 2015, and Agnes S. Steele, allottee No. 2015, are
one and the same person.

John W. Johnson,
Acting Superintendent

206 60798

Fort Peck Agency
Poplar, Montana

November 6, 1950

This is to certify that Austin Scott, original
allottee No. 2293, and Austin R. Buckles, allottee No. 2293,
are one and the same person.

John W. Johnson,
Acting Superintendent

FOR PECK AGENCY
RECEIVED
NOV 10 1950
U.S. DEPT. OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
POPULAR

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

206-60798

LEASE No. 17777(91)

CONTRACT No. I-37-Ind-12878

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior or his authorized representative has heretofore approved
OIL AND GAS mining lease, dated February 27, 1950
Mary Foote; Maude F. Buckles; Kate F. Redbear and Thomas Redbear
entered into by and between Alice Foote; Mabel F. Bighorn and Jacob Bighorn; Agnes S. Steele and William Steele; Trivian M. Graves; Austin S. Buckles and Audrey M. Buckl
and C. H. MURPHY, JR., lessee,

covering the following-described lands in the FORT PECK INDIAN RESERVATION
(Insert name of Reservation, Pueblo, Nation, etc., as needed)
in the State of MONTANA, COUNTY OF ROOSEVELT
Township 28 North, Range 51 East
Section 14: W/2

Now, THEREFORE, for and in consideration of Ten and more
dollars (\$10.00), the receipt of which is hereby acknowl-
edged, the said FAIRWAY RESOURCES, INC.

the owner of the above-described lease, hereby bargains, sells, transfers, assigns, and conveys
ALL OF ITS right, title, and interest in and to said lease,

subject to the approval of the Secretary of the Interior or his authorized representative to
WELLSTAR CORPORATION, of 9704 State Highway 66,
Platteville, CO 80651 Said assignment to be effective from date of approval hereby by the Secretary
of the Interior or his authorized representative.

IN WITNESS WHEREOF, the said assignor has hereunto set his hand and seal, this 16th
day of SEPTEMBER, 1986

ATTEST:

David Roitman
David Roitman, Secretary

FAIRWAY RESOURCES, INC.

By: Steven A. Roitman
Steven A. Roitman, President

5-5429
(August 1961)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

LEASE No. 47777(91)

CONTRACT No. I-37-Ind-12878

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior or his authorized representative has heretofore approved

Oil and Gas mining lease, dated February 27 1950,
Mary Foote; Maude F. Buckles; Kate F. Redbear and Thomas Redbear
entered into by and between Alice Foote; Mabel F. Bighorn and Jacob Bighorn; Agnes lessor,
S. Steele and William Steele; Trivian M. Graves; Austin S. Buckles and Audrey M. Buckles
and C. H. Murphy, Jr., lessee,

covering the following-described lands in the Fort Peck Indian Reservation
(Insert name of Reservation, Pueblo, Nation, etc., as needed)
in the State of Montana, County of Roosevelt

Township 28 North, Range 51 East

Section 14: W/2

Now, THEREFORE, for and in consideration of Ten and more

_____ dollars (\$ 10.00), the receipt of which is hereby acknowl-
edged, the said Partnership Properties Co.

the owner of the above-described lease, hereby bargains, sells, transfers, assigns, and conveys _____
all of its _____ right, title, and interest in and to said lease,

subject to the approval of the Secretary of the Interior or his authorized representative to Fairway
Resources, Inc. - 87.5%, TPEX Exploration, Inc. - 12.5%, of 1536 Cole Boulevard, Ste. 22
Golden, Colorado 80401 Said assignment to be effective from date of approval hereby by the Secretary
of the Interior or his authorized representative.

IN WITNESS WHEREOF, the said assignor has hereunto set his hand and seal, this 15th
day of January, 1985

PARTNERSHIP PROPERTIES, CO.

By: Charles E. Holmes

Charles E. Holmes

Attorney-in-fact

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

206 60798
LEASE No. 17777(91)
CONTRACT No. I-37-Ind-12878

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior or his authorized representative has heretofore approved oil and gas _____ mining lease, dated February 27, 1950, entered into by and between Alice Foote; Mabel F. Bighorn and Jacob Bighorn; Agnes Steele and William Steele; Trivian M. Graves; Austin S. Buckles and Audrey M. Buckles and C. H. Murphy, Jr., lessee,

covering the following-described lands in the Fort Peck Indian Reservation
(Insert name of Reservation, Pueblo, Nation, etc., as needed)
in the State of Montana, County of Roosevelt:
Township 28 North, Range 51 East
Section 14: W/2

Now, THEREFORE, for and in consideration of _____
Ten and more _____ dollars (\$ 10.00), the receipt of which is hereby acknowledged, the said Placid Oil Company
the owner of the above-described lease, hereby bargains, sells, transfers, assigns, and conveys _____
all of their (50%) _____ right, title, and interest in and to said lease,

subject to the approval of the Secretary of the Interior or his authorized representative to _____
Partnership Properties Co., of 717 Seventeenth St.,
Denver, Colorado Said assignment to be effective from date of approval hereby by the Secretary
of the Interior or his authorized representative.

IN WITNESS WHEREOF, the said assignor has hereunto set its hand and seal, this 20th
day of January, 1982

ATTEST:

Paul W. Hicks

PAUL W. HICKS, SECRETARY

PLACID OIL COMPANY

C. D. Brown

C. D. BROWN, PRESIDENT

LEASE No. 17777 (91)

CONTRACT No. I-37-Ind-12878

5-154a
(August 1961)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior or his authorized representative has heretofore approved oil and gas _____ mining lease, dated February 27, 1950, entered into by and between Alice Foote; Mabel F. Bighorn and Jacob Bighorn; Agnes Steele and William Steele; Trivian M. Graves; Austin S. Buckles and Audrey M. Buckles and C. H. Murphy, Jr., _____, lessee,

covering the following-described lands in the Fort Peck Indian Reservation
(Insert name of Reservation, Pueblo, Nation, etc., as needed)
in the State of Montana, County of Roosevelt;
Township 28 North, Range 51 East
Section 14: W/2

Now, THEREFORE, for and in consideration of _____

Ten and more _____ dollars (\$ 10.00), the receipt of which is hereby acknowledged, the said Placid Oil Company
the owner of the above-described lease, hereby bargains, sells, transfers, assigns, and conveys
all of their (50%) _____ right, title, and interest in and to said lease,

subject to the approval of the Secretary of the Interior or his authorized representative to _____
Partnership Properties Co. _____, of 717 Seventeenth St.,
Denver, Colorado. Said assignment to be effective from date of approval hereby by the Secretary
of the Interior or his authorized representative.

IN WITNESS WHEREOF, the said assignor has hereunto set its hand and seal, this 20th
day of January, 19 82

ATTEST:

Paul W. Hicks
PAUL W. HICKS, SECRETARY

PLACID OIL COMPANY

C. D. Brown
C. D. BROWN, PRESIDENT

Contract No. I-37-Ind-12878

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Please No. 3577

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior has heretofore approved a certain oil and gas mining lease dated February 27, 1950 entered into by and between Mary Foote et al

and C. H. MURPHY, JR., Lessee, covering the following described lands in the Fort Peck Indian Reservation in the State of Montana, County of Roosevelt:

Township 28 North, Range 51 East, M.P.M.

Sec. 14: W/2

COPIES OF FILED.

ZAGREB 7. ZIBBBA

IN MATTHEW 24:14-15, THE FIRST PART OF THE VERB PHRASE IS IN THE PRESENT TENSE, AND THE SECOND PART IS IN THE FUTURE TENSE.

b7D;C b7E;C b7F;C b7G;C b7H;C b7I;C b7J;C b7K;C b7L;C b7M;C b7N;C b7O;C b7P;C b7Q;C b7R;C b7S;C b7T;C b7U;C b7V;C b7W;C b7X;C b7Y;C b7Z;C

According to the present author, however, not so limited bodies, such as the above-mentioned, are not qualified persons of legal responsibility and the laws and regulations of the State of the present party must apply to them and they are to provide an organization concerning the law. The position of the present law, however, is not to be the subject of the law.

VLCB17ZC BA 7240ZEE

WHEREAS, the above described lease is subject to a certain Unit Agreement designated I-Sec. No. 869, approved by the Assistant Commissioner of Indian Affairs on August 22, 1951, and approved by the Acting Director of the United States Geological Survey on August 23, 1951; and

WHEREAS, by mesne assignments heretofore approved by the Secretary of the Interior, MARINE OIL COMPANY, an Arkansas Corporation, of El Dorado, Arkansas, is the present owner of an undivided interest in and to the above described lease.

NOW, THEREFORE, for and in consideration of ONE AND MORE dollars (\$1.00), the receipt of which is hereby acknowledged, the said MARINE OIL COMPANY hereby transfers, assigns, and conveys an undivided one-fourth (1/4) right, title and interest in and to said lease to WILLIAM J. SHERRY of Tulsa, Oklahoma, said assignment to be effective from date of approval hereof by the Secretary of the Interior.

IN WITNESS WHEREOF, the said assignor has hereunto set its hand and seal, this 1st day of November, 1954.

Attest: [Signature]
Assistant Secretary

MARINE OIL COMPANY

By *O. B. Johnson*
Vice President

(OVER)

752707/1900/AL-2 3 1 1 1000004

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

Contract No. I-37-Ind-12878

Lease No. 3577

206 60798

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior has heretofore approved a certain oil and gas mining lease dated February 27, 1950, entered into by and between Mary Foote et al

_____, Lessors,
and C. H. MURPHY, JR., Lessee, covering the following described lands in the Fort Peck Indian Reservation in the State of Montana, County of Roosevelt:

Township 28 North, Range 51 East, M.P.M.

Sec. 14: W/2

WHEREAS, the above described lease is subject to a certain Unit Agreement designated I-Sec. No. 869, approved by the Assistant Commissioner of Indian Affairs on August 22, 1951, and approved by the Acting Director of the United States Geological Survey on August 23, 1951; and

WHEREAS, by mesne assignments heretofore consummated, WILLIAM J. SHERRY of Tulsa, Oklahoma, is the present owner of an undivided interest in and to the above described lease.

NOW, THEREFORE, for and in consideration of TEN AND MORE dollars (\$10.00), the receipt of which is hereby acknowledged, the said WILLIAM J. SHERRY does hereby bargain, sell, transfer, assign and convey unto MURPHY CORPORATION, a Louisiana Corporation, of El Dorado, Arkansas, an undivided one-fourth ($\frac{1}{4}$) right, title and interest in and to the lease hereinabove described, said assignment to be effective from date of approval hereof by the Secretary of the Interior.

IN WITNESS WHEREOF, the said assignor has hereunto set his hand and seal, this 5th day of November, 1954.

William J. Sherry (L.S.)
WILLIAM J. SHERRY

(OVER)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

Contract No. I-37-Ind-12878
Our Lease No. 3577

206 50798

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior has heretofore approved a certain oil and gas mining lease dated February 27, 1950, entered into by and between

Mary Foote (Single)(339); Maude F. Buckles (Single)(129); Kate F. Redbear and Thomas Redbear (3589)(340) wife and husband; Alice Foote (Single)(2001); Mabel F. Bighorn and Jacob Bighorn (2448)(1762) wife and husband; Agnes S. Steele and William Steele (2015) wife and husband; Trivian M. Graves-minor (G-215); Austin S. Buckles and Audrey M. Buckles (2293) husband and wife

Township 28 North, Range 51 East, M.P.M.
Sec. 14: W/2

WHEREAS, the above-described lease is subject to a certain Unit Agreement designated I-Sec. No. 869, approved by the Assistant Commissioner of Indian Affairs on August 22, 1951, and approved by the Acting Director of the United States Geological Survey on August 23, 1951;

AND WHEREAS, the Secretary of the Interior has heretofore approved an assignment of an undivided interest in the above-described lease from the said C. H. MURPHY, JR., to MURPHY CORPORATION, a Louisiana Corporation of El Dorado, Arkansas;

NOW, THEREFORE, for and in consideration of TEN AND MORE dollars (\$10.00), the receipt of which is hereby acknowledged, the said MURPHY CORPORATION hereby bargains, sells, transfers, assigns, and conveys, an undivided one-fourth ($\frac{1}{4}$) right, title and interest in and to said lease to MARINE OIL COMPANY, an Arkansas Corporation, of El Dorado, Arkansas. Said assignment to be effective from date of approval hereof by the Secretary of the Interior...

IN WITNESS WHEREOF, the said assignor has hereunto set its hand and seal, this 16th day of

July, 1954.

Attest

Chad L. Durrett
Assistant Secretary
Chad L. Durrett

MURPHY CORPORATION

By

Exploration Manager
Exploration Manager

(OVER)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

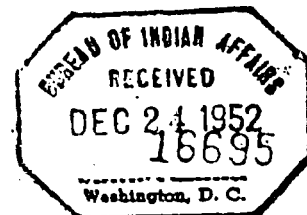
Contract No. 3577 ⁹¹mes

206-60798

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior has heretofore approved a certain oil and gas mining lease dated February 27, 1950, entered into by and between Harry Foote; Maude J. Buckles; Arto F. Redbear & Thomas Redbear; Alice Foote; Mabel P. Bighorn & Jacob Bighorn; Agnes S. Steele & William Steele; Trivian M. Graves; Austin S. Buckles & Audrey M. Buckles, lessors, and C. H. MURPHY, JR. lessee, covering the following described lands in the Fort Peck Indian Reservation in the State of Montana, County of Roosevelt:

T25N, R51E, Sec. 14, 1/2



AND WHEREAS, the above-described lease is subject to a certain Unit Agreement designated I-Sec. No. 869, approved by the Assistant Commissioner of Indian Affairs on August 22, 1951, and approved by the Acting Director of the United States Geological Survey on August 23, 1951:

NOW, THEREFORE, for and in consideration of TEN AND MORE dollars (\$10.00), the receipt of which is hereby acknowledged, the said C. H. MURPHY, JR., the owner of the above-described lease, hereby bargains, sells, transfers, assigns and conveys all of his right, title and interest in and to said lease, subject to the approval of the Secretary of the Interior, to MURPHY CORPORATION, a Louisiana Corporation of El Dorado, Arkansas, an undivided fifteen thirty-seconds (15/32) interest; to PLACID OIL COMPANY, a Delaware Corporation of Shreveport, Louisiana, an undivided one-half (1/2) interest; and to WILLIAM C. NOLAN AND THEODOSIA M. NOLAN of El Dorado, Arkansas, an undivided one thirty-second (1/32) interest; said assignment to be effective from date of approval hereof by the Secretary of the Interior.

IN WITNESS WHEREOF, the said assignor has hereunto set his hand and seal, this 22nd day of

July, 19 52.

C. H. MURPHY JR.

HyR

RECEIVED OR FILED
THE INDIAN AFFAIRS
BUREAU OF INDIAN AFFAIRS
SEP 10 1 13 PM '88

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

LEASE No. 3577

CONTRACT No. I-3712878

206 60798

BRANCH OF REALTY
TITLES & RECORDS
SECTION

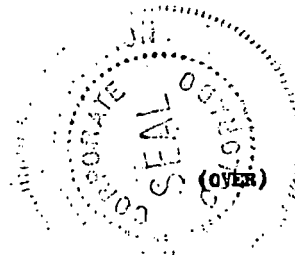
ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior or his authorized representative has heretofore approved
Oil and Gas mining lease, dated November 30, 1950,
entered into by and between Mary Foote et al, lessor,
and C. H. Murphy, Jr., lessee,
covering the following-described lands in the Fort Peck Reservation
(Insert name of Reservation, Pueblo, Nation, etc., as needed)
in the State of Montana
Township 28 North, Range 51 East
Section 14: W $\frac{1}{2}$

NOW, THEREFORE, for and in consideration of Ten dollars and other valuable
consideration dollars (\$10.00), the receipt of which is hereby acknowl-
edged, the said Wellstar Corporation
the owner of the above-described lease, hereby bargains, sells, transfers, assigns, and conveys
all of its right, title, and interest in and to said lease,

subject to the approval of the Secretary of the Interior or his authorized representative to
Murphy Oil USA, Inc., of 200 Peach Street,
71730
El Dorado, AR Said assignment to be effective from date of approval hereby by the Secretary
of the Interior or his authorized representative.

IN WITNESS WHEREOF, the said assignor has hereunto set his hand and seal, this 19th
day of Jan, 1987



WELLSTAR CORPORATION

By: Walter Mayer
Walter Mayer, President
By: Dorothy Mayer
Secretary

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

LEASE No. 3577

CONTRACT No. I-3712878

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior or his authorized representative has heretofore approved
Oil and Gas mining lease, dated November 30, 1950,
entered into by and between Mary Foote et al, lessor,
and C. H. Murphy, Jr., lessee,
covering the following-described lands in the Fort Peck Reservation
(Insert name of Reservation, Pueblo, Nation, etc., as needed)
in the State of Montana

Township 28 North, Range 51 East

Section 14: W $\frac{1}{2}$

NOW, THEREFORE, for and in consideration of Ten dollars and other valuable
consideration dollars (\$10.00), the receipt of which is hereby acknowl-
edged, the said TPEX Exploration, Inc.
the owner of the above-described lease, hereby bargains, sells, transfers, assigns, and conveys
all of its right, title, and interest in and to said lease,

subject to the approval of the Secretary of the Interior or his authorized representative to
Murphy Oil USA, Inc., of 200 Peach Street,
El Dorado, AR 71730
Said assignment to be effective from date of approval hereby by the Secretary
of the Interior or his authorized representative.

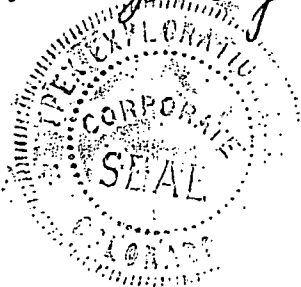
IN WITNESS WHEREOF, the said assignor has hereunto set his hand and seal, this 23rd
day of January, 1957

TPEX Exploration, Inc.

By:

Hunter S. Swanson, President

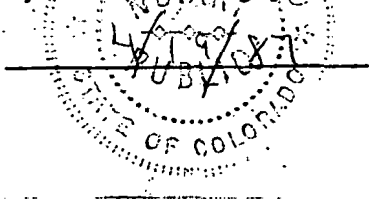
(OVER)



STATE OF COLORADO)
COUNTY OF DENVER) ss

On this 16th day of January in the year 1985,
before me Mary J. Pritchard, a Notary Public for the
State of Colorado, personally appeared Charles E. Holmes
known to me to be the person whose name is subscribed
to the within instrument as the Attorney in Fact of Partnership Properties Co.
and acknowledged to me that he subscribed the name of Partnership Properties Co.
thereto as principal, and his own name as Attorney in Fact.

My commission expires:



Mary J. Pritchard
Notary Public
State of Colorado
Residing at 717-17th Street
Denver, CO 80202

206-60733

ASSIGNED EFFECTIVE 12/31/52 FROM C.H. MURPHY, Jr. ALL TO: MURPHY CORPORATION 15/32
PLACID OIL CO. 16/32
Wm. & THEODOSA NOLAN 1/32

ASSIGNED EFFECTIVE 9/29/54 FROM MURPHY TO: MARINE OIL 1/4 OF 15/32 OR 15/128
OWNERS: MURPHY 45/128, PLACID OIL CO. 64/128, NOLANS 4/128, & MARINE OIL 15/128

ASSIGNED EFFECTIVE 4/1/55 FROM MARINE OIL TO Wm. J. SHERRY 1/4 OF 15/128 OR 15/512
OWNERS: MURPHY 180/512, PLACID OIL CO. 256/512, NOLANS 16/512, MARINE OIL 45/512,
& Wm. J. SHERRY 15/512

ASSIGNED EFFECTIVE 4/4/55 FROM Wm. J. SHERRY TO: MURPHY 1/4 OF 15/512 OR 15/2048
OWNERS: MURPHY 735/2048, PLACID OIL CO. 1024/2048, NOLANS 64/2048, MARINE OIL 180/2048,
& Wm. J. SHERRY 45/2048

ASSIGNED EFFECTIVE 4/2/82 FROM PLACID OIL CO. TO: PARTNERSHIP PROPERTIES COMPANY- ALL
OWNERS: MURPHY 735/2048, NOLANS 64/2048, MARINE OIL 180/2048, Wm. J. SHERRY 45/2048,
& PARTNERSHIP PROPERTIES COMPANY 1024/2048

ASSIGNED EFFECTIVE 12/16/86 FROM PARTNERSHIP PROPERTIES COMPANY TO: FAIRWAY RESOURCES, INC.
(896/2048), & TPEX EXPLORATION, INC. (128/2048)
OWNERS: MURPHY 735/2048, NOLANS 64/2048, MARINE OIL 180/2048, Wm. J. SHERRY 45/2048,
FAIRWAY RESOURCES, INC. 896/2048, & TPEX EXPLORATION, INC. 128/2048

ASSIGNED EFFECTIVE 12/16/86 FROM FAIRWAY RESOURCES, INC. (896/2048) TO: WELLSTAR CORPORATION
(896/2048)

ASSIGNED EFFECTIVE 3/19/87 FROM: TPEX EXPLORATION, INC. (128/2048) TO: MURPHY OIL USA, INC.

ASSIGNED EFFECTIVE 3/19/87 FROM: WELLSTAR CORPORATION (896/2048) TO: MURPHY OIL USA, INC.

File

A.F.E. No. 8-5017 *Poplar*

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 101
SW NW Section 14, T28N, R51E, Roosevelt County, Montana
(Installation of Pumping Unit)

Pumping unit complete with engine	\$5,650
Labor and materials setting unit (complete)	950
Trucking, small fittings, dirt work, and incidentals	300
Rods, pump and well head equipment	<u>3,000</u>
Total Estimated Cost	\$9,900

This well is in a low pressure area and will require pumping as soon as it is completed.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470 %	\$3,113
Manoco Company	2.096565 %	208
Placid Oil Company	33.515035 %	3,321
Carter Oil Company	16.335860 %	1,617
Phillips Petroleum Company	16.335860 %	1,617
C. F. Lundgren	.238210 %	24

APPROVAL OF EXPENDITURE

Requested by: *MMH* 6-28-57
Date

Recommend Approval:

Harold Miller
Division Production Supt. Date

Staff Production Man Date

Recommend Approval:

Recommend Approval:

Gordon Kishy
Division Manager Date

Budget Supervisor Date

Approved:

Vice President-Operations Date

MTJ:br
6-28-57

Koplar

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 101
SW NW Section 14-T28N-R51E, Roosevelt County, Montana

WELL DRILLING & CONSTRUCTION EXPENSE:	TO CSG. PT.	COMP. & EQUIP.	TOTAL COST
Drilling - Footage - 5880' @ \$525/ft.	\$ 30,875		\$ 30,875
Daywork - 4 days @ \$850/day & 2 days @ \$775/day	3,400		3,400
Loc. survey, permit & prep.	500	\$ 1,550	1,550
Roads, fences, cattleguard, etc.	1,200		1,200
Mud mat. & chem., incl. oil & gas	3,500		3,500
Drilling bits, baskets, etc.		250	250
Cementing casing	1,550	1,150	2,700
Coring materials & services	600		600
Testing services, incl. swabbing	800		800
Other logs, surveys, & analysis	1,600	800	2,400
Perforating services		600	600
Hydrafrac, acidize, etc., incl. oil		1,400	1,400
Float equip., centralizers, etc.	300	600	900
Trucking, welding & other labor	250	500	750
Supervision & miscellaneous	850	500	750
Total Est. Well Drig. & Const. Exp.	\$ 44,825	\$ 7,350	\$ 52,175

WELL EQUIPMENT COSTS:			
Casing: 1000' of 9-5/8" O.D.	\$ 4,000		\$ 4,000
Casing: 5880' of 5-1/2" O.D.		\$ 10,825	10,825
Tubing: 5880' of 2-7/8" O.D.		5,225	5,225
Casing head & connections	300		300
Xmas tree & connections		800	800
Total Est. Well Equip. Costs	\$ 4,300	\$ 16,850	\$ 21,150
Total Est. Cost of Well	\$ 49,125	\$ 24,200	\$ 73,325

LEASE EQUIPMENT:			
Flow lines		\$ 2,500	\$ 2,500
Other line pipe, valves, & fittings		500	500
Trucking, welding, & other labor		500	500
Total Est. Cost of Lease Equip.		\$ 3,500	\$ 3,500
TOTAL EST. COST OF WELL & LEASE EQUIP.	\$ 49,125	\$ 27,700	\$ 76,825

APPORTIONMENT OF TOTAL ESTIMATED COSTS

Murphy Corporation	31.448470%	\$ 15,449	\$ 8,711	\$ 24,160
Mumoco Company	2.096565%	1,030	581	1,611
Placid Oil Company	33.545035%	16,479	9,292	25,771
The Carter Oil Company	16.335860%	8,025	4,525	12,550
Phillips Petroleum Company	16.335860%	8,025	4,525	12,550
C. F. Lundgren	.238210%	117	66	183

APPROVAL OF EXPENDITURE

Requested by:

Harold Milan JUN 10 1957
Division Production Supt. Date

Recommend Approval:

Gordon Kirby JUN 12 1957
Division Manager Date

Recommend Approval:

Staff Production Man Date

Recommend Approval:

Budget Supervisor Date

Approved:

Vice President-Operations Date

Poplar

GEOLOGICAL PROSPECTUS

Division Billings Lease No. 3577
 Operator Murphy Corporation Well Name East Poplar Unit Well No. 101
 Location C NW/4 Section 14 Township 28 North Range 51 East
 Pool Name: East Poplar County Roosevelt State Montana
 Type of Well: Oil x Gas Exploratory Development x
 Objective Formation Fast Zone of the Madison Projected Depth 6220'
 Well Elevations 2172' K.B. (est); 2160' Gr. (est)

Expected Stratigraphic Section and Estimated Depths:

Judith River-----	817 (+1355)	Amsden-----	4762 (-2590)
Eagle-----	1197 (+ 975)	Heath-----	4892 (-2720)
Niobrara-----	2051 (+ 115)	Otter-----	5057 (-2885)
Greenhorn-----	2400 (- 228)	Kibbey Sand-----	5182 (-3010)
Muddy-----	2962 (- 790)	Kibbey Limestone-----	5337 (-3165)
Dakota-----	3182 (-1010)	Madison-----	5437 (-3265)
Morrison-----	3552 (-1380)	A Zone-----	5516 (-3341)
Swift-----	3632 (-1460)	B Zone-----	5690 (-3518)
Rierdon-----	4142 (-1970)	C-1 Zone-----	5840 (-3688)
Piper Shale-----	4320 (-2148)	Mission Canyon-----	5885 (-3713)
Piper Limestone-----	4400 (-2228)	Fast Zone-----	6120 (-3948)
Spearfish-----	4647 (-2475)	Total Depth-----	6220 (-4048)

Anticipated Pay Horizons, Net Pay and Expected Depths:

B-1 (6') 3690 (-3518)
 B-2 (15') 5712 (-3540)
 C-2 (8') 5860 (-3688)

Recommended Coring and Formation Testing Program:

B-4 20' *
 C1 through C4, if present, 55' *
 Fast Zone 100' * Commence coring 10' above Fast Zone.
 Side wall core the Greenhorn after running logs.
 Circulate up Heath and Kibbey and Core on show.
 * Have Core Analysis.

Test - C-2 - all other tests at discretion of well site geologist.

Recommended Sampling and Logging Program:

10' samples from 2000' to 4000'	2" E.S. from base surface pipe to T.D.
5' samples from 4000' to T.D.	5" E.S. from 2000' to T.D.
	5" M.L. from 2000' to T.D.

Remarks: (Including pertinent data relative to location accessibility, unusual drilling problems due to surface or subsurface conditions, etc.)

Wade J. Moore
 Division Geologist 9-19-57

HJM/vmf

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 101
SW NE Section 14-T28N-R51E, Roosevelt County, Montana
(To Move Location and to Deepen to the Fast Zone)

<u>WELL DRILLING & CONSTRUCTION EXPENSE:</u>	<u>TO CSG. PT.</u>	<u>COMP. & EQUIP.</u>	<u>TOTAL COST</u>
Drilling - Footage - 340' @ \$5.25/ft.	\$ 1,775		\$ 1,775
Daywork - 3 days @ \$850/day	2,550		2,550
2 days @ \$775/day		\$ 1,550	1,550
Loc. survey, permit & prep.	500		500
Roads, fences, cattleguard, etc.	500		500
Mud mat. & chem., incl. oil & gas	4,500		4,500
Coring materials and services	500		500
Testing services, incl. swabbing	800		800
Other logs, surveys, & analysis	200		200
Total Est. Well Drlg. & Const. Exp.	\$ 11,325	\$ 1,550	\$ 12,875
<u>WELL EQUIPMENT COSTS:</u>			
Casing: 340' of 5-1/2" O.D.		\$ 625	\$ 625
Tubing: 340' of 2-7/8" O.D.		300	300
Total Est. Well Equip. Costs		\$ 925	\$ 925
Total Est. Cost of Well	\$ 11,325	\$ 2,475	\$ 13,800
<u>LEASE EQUIPMENT:</u>			
Flow lines		\$ 700	\$ 700
Total Est. Cost of Lease Equip.		\$ 700	\$ 700
TOTAL EST. COST OF WELL & LEASE EQUIP.	\$ 11,325	\$ 3,175	\$ 14,500

APPORTIONMENT OF TOTAL ESTIMATED COSTS

Murphy Corporation	31.448470%	\$ 3,562	\$ 998	\$ 4,560
Mumoco Company	2.096565%	237	67	304
Placid Oil Company	33.545035%	3,799	1,065	4,864
The Carter Oil Company	16.335860%	1,850	519	2,369
Phillips Petroleum Co.	16.335860%	1,850	519	2,369
C. F. Lundgren	.238210%	27	8	35

APPROVAL OF EXPENDITURE

Requested by:

Harold D. Mills OCT 8 1957
Division Production Supt. Date

Recommend Approval:

Barton Kirby OCT 8 1957
Division Manager Date

Recommend Approval:

Staff Production Man Date

Recommend Approval:

Budget Supervisor Date

Approved:

Vice President-Operations Date

AUTHORITY FOR EXPENDITURE

MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 101

SW NW Section 14, T28N, R51E, Roosevelt County, Montana
(Dual Complete Heath Sand and "C"-5 Zone)

HISTORY: Completed December 7, 1957 from the C-5 Zone, perforations 5891-96'.
Cumulative Production through December, 1965 223,418 BO 303,745 BW.

PRESENT STATUS: Flowing from the C-5 Zone. January 4, 1966 Well Test 9/64"
Choke 260 BFPD 92% Water 21 BOPD 239 BTPD TFP 410 PSI.

PROPOSAL: Dual complete the Heath Sand with the C-5 Zone.

WORKOVER PLAN: Kill the C-5 Zone with mud and set D.R. Plug in Model "D" Packer at 5834'. Run Cement Bond Log, perforate, and block squeeze bottom and top of the Heath Sand. 4976' Bottom and 4946' Top. (if cement not bonded) Perforate the Heath Sand 4963-68', G & N Log measurements (tentative), 1 hole per foot. Swab test and Sand Frec if needed. Run dual strings of 2-1/16" O.D. Tubing and dual complete.

ESTIMATED COST

Pulling Unit 110 hrs. at \$32.00 per hr.	\$ 3,500.00
Cement bond logs, perf. Heath Sand and perf. to Block Squeeze (if all needed)	\$ 1,800.00
Mud material and 500 gallon Acid Job (if needed)	\$ 1,500.00
Sand Frec Heath Sand (if needed)	\$ 1,800.00
Packer rental and service (if needed)	\$ 1,400.00
11,700' of 2-1/16" O.D., 3.25#, J-55 Tubing with CS	
Hydrill thd. @ \$134.68 per 100' (70B Poplar)	\$15,750.00
Dual Head, 5000' of 5/8" (USI) S-67 Slim Hole Sucker	
Rods, Down Hole Pump, Wireline Plug and Well Head hook up	\$ 3,500.00
Metering Equipment	\$ 4,500.00
Class No. 2 American 160 Peak Torque Pumping Unit with Electric Motor and Controls (on hand)	\$ 2,500.00
Misc. Labor, Trucking and Material	\$ 1,000.00
Total Estimated Cost	\$39,550.00

Estimated pay out at 75 BOPD One Year

APPORTIONMENT OF TOTAL COST

Murphy Oil Corporation	31.448470%	\$12,438.00
Placid Oil Company	33.545035%	\$13,267.00
Humble Oil and Refining Company	16.333860%	\$ 6,461.00
Drilling Specialities Company	16.333860%	\$ 6,461.00
Munoco Company	2.096565%	\$ 829.00
C. F. Lundgren	.238210%	\$ 94.00

APPROVAL OF EXPENDITURE

Requested by:

Recommend Approval:

M. T. James
M. T. James

1-26-66
Date

W. J. Thornton
Date

APPROVED:

L. L. Duncan

Date

MTJ/sb

REC. PROD. NOV 4 1977

A.F.E. No. 7-1544-10

MURPHY OIL CORPORATION³⁹
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 101²⁵
SW NW Section 14, T28N, R51E, Roosevelt County, Montana 3

It is proposed to replace 630' of East Poplar Unit No. 101 flowline with 2-7/8" tubing from the old "K" Battery line and tie directly into the 5-1/2" casing line from "H" Battery. There has been numerous leaks in the present line.

ESTIMATED COST 3

630' of 2-7/8" Tubing, Condition No. 3	\$ 425
Roustabout Labor To Ditch and Lay Line	\$ 950
Total Estimated Cost	\$1,375

APPORTIONMENT OF TOTAL ESTIMATED COST 32 -

Murphy Oil Corporation	31.448470%	\$ 432
Placid Oil Company	33.545035%	\$ 461
Phillips Petroleum Company	16.335860%	\$ 225
Exxon Company, U.S.A.	16.335860%	\$ 225
Munoco Company	2.096565%	\$ 29
C. F. Lundgren	.238210%	\$ 3

APPROVAL OF EXPENDITURE 39

Requested by:

Approved by:

Billy G. Melear
Billy G. Melear

Date

A. W. Simpson
A. W. Simpson

11/4/77
Date

Last 1,370

RR/sb
November-1, 1977

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 101
SW NW SECTION 14, T28N, R51E, ROOSEVELT COUNTY, MONTANA

East Poplar Unit # 101 is now producing from the C-5 Zone at 5891-5896, flowing 100% water. It is proposed to kill the well and squeeze the C-5 Zone with 75 sacks of cement, and perforate the C-3 Zone at 5846-5851. The East Poplar Unit # 104 is producing from the C-3 Zone at 3400 barrels of fluid per day at 1% oil. The East Poplar Unit # 101 is 34' high to 104. This well should make 40 barrels per day, and pay out in 40 days.

ESTIMATED COST

Rig	\$ 7,500
HOWCO	\$ 3,500
Perforations	\$ 2,000
Tools	\$ 3,000
Hydro-Test	\$ 1,500
Supervision & Misc.	\$ 1,500
Contingencies	\$ 1,500
TOTAL ESTIMATED COST	\$20,500

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 6,447
Petro-Lewis Corporation	33.545035%	\$ 6,877
Phillips Petroleum Company	16.335860%	\$ 3,349
Exxon Company, U.S.A.	16.335860%	\$ 3,349
Munoco Company	2.096565%	\$ 430
C.F. Lundgren	.238210%	\$ 49

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Raymond Reede
 Raymond Reede

11-18-82
 Date

A.W. Simpson

 Date

RR/bv
 November 18, 1982

Rec. Prod. MAR 21 1988

A.F.E. NO. 8-0505-010

MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE
EAST POPLAR UNIT NO. 101
SW NW SECTION 14, T28N, R51E
ROOSEVELT COUNTY, MONTANA

PROPOSAL & JUSTIFICATION:

EPU No. 101 is completed in the C-5 Zone 5891'-5896' and produces part time 99½% water.

It is proposed to squeeze the C-5 Zone with 75 sacks cement then perforate the C-3 Zone at 5846'-5851', swab test and acidize with 150 gallons 15% acid, if necessary. This well should make 40 BOPD and pay out in 5 months.

ESTIMATED COST

Workover Rig -----	\$ 8,000
Squeeze -----	3,500
Acid -----	1,000
Perforators -----	2,000
Rental Tools -----	3,000
Hydrotest -----	1,500
Supervision & Miscellaneous -----	1,500
Contingencies -----	1,500
Total Estimated Cost	\$22,000.

APPORTIONMENT OF TOTAL COST

Murphy Oil USA, Inc.	81.329265%	\$17,893
Exxon Company U.S.A.	16.335886%	3,594
Munoco Company	2.096565%	461
C. F. Lundgren	.238210%	52

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Raymond Reede
Raymond Reede

3-17-88
Date

A. W. Simpson
A. W. Simpson

3/22/88
Date

RR/jh
March 17, 1988

CFD

DATE JOB COMPLETED	8-1-88
APPROXIMATE COST	\$47,985.00
BY	RR

A.F.E. NO. 8-0505-010
Supplement No. 1

MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE
EAST POPLAR UNIT NO. 101
SW NW SECTION 14, T28N, R51E
ROOSEVELT COUNTY, MONTANA

This A.F.E. was overspent due to the fact that the well had to be squeezed twice, a pumping unit had to be set and rods had to be purchased.

SUPPLEMENTAL COST

	Original	Actual	Supplement #1
Workover Rig	\$ 8,000	\$ 7,639	\$ (361)
Squeeze	3,500	6,873	3,373
Acidize	1,000	-0-	(1,000)
Perforators	2,000	3,970	1,970
Rental Tools	3,000	3,091	91
Hydrotest	1,500	1,016	(484)
Supervision & Miscellaneous	1,500	3,614	2,114
Contingencies	<u>1,500</u>	<u>21,073</u>	<u>19,573</u>
Total Supplemental Cost	\$22,000	\$47,276	\$ 25,276

APPORTIONMENT OF SUPPLEMENTAL COST

Murphy Oil USA, Inc.	60.363718%	\$ 13,281	\$ 28,537	\$ 15,258
Exxon Company U.S.A.	16.335860%	3,594	7,723	4,129
Munoco Company	2.096565%	461	991	530
C.F. Lundgren	.238210%	52	113	60
Doil Oil & Gas Corp.	20.965647%	4,612	9,912	5,299

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Raymond Reede
Raymond Reede

Date

A.W. Simpson
A.W. Simpson

8/1/88
Date

RR/jh
August 2, 1988

DATE JOB COMPLETED 8-1-88
APPROXIMATE COST \$47,988⁰⁰
BY RR

105610 5/22/89

A.F.E. No. 9-0508-010

MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE
EAST POPLAR UNIT NO. 101
SW NW SECTION 14, T28N, R51E
ROOSEVELT COUNTY, MONTANA

PROPOSAL & JUSTIFICATION:

East Poplar Unit No. 101 is currently producing from the C-3 Zone 5846'-51' at 3 BOPD and 61 BWPD which is uneconomical. It is proposed to acidize this zone with 250 gallons 15% HCL Penn 88 acid. With 20 BOPD production this should pay out in 50 days.

ESTIMATED COST

Rig -----	\$ 4,000
Acid -----	1,200
Hydrotest -----	1,000
Roustabout -----	800
Packer -----	1,000
Supervision & Miscellaneous -----	<u>1,000</u>
TOTAL ESTIMATED COST	\$ 9,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil USA, Inc.	60.363718%	5,433
Doil Oil & Gas Corp.	20.965647%	1,887
Exxon Company, U.S.A.	16.335860%	1,470
Munoco	2.096565%	189
C.F. Lundgren	.238210%	21

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Raymond S. Reece 5-22-89 A.W. Simpson 5/24/89
Raymond Reece Date A.W. Simpson Date

RR/jh
May 22, 1989

(GFD)

DATE JOB COMPLETED	_____
APPROXIMATE COST	_____
BY	_____

Dist 2/24

A.F.E. No. 70401

OBJECT CODE: 232900

MURPHY EXPLORATION AND PRODUCTION COMPANY
 AUTHORITY FOR EXPENDITURE
 EAST POPLAR UNIT NO. 101
 NW NW Section 14, T28N, R51E
 ROOSEVELT COUNTY, MONTANA

RECOMPLETEPROPOSAL AND JUSTIFICATION:

The subject well is currently flowing from C-3 perforations 5846'-51' at a rate of 10 BOPD and 1000 BWPD. It is proposed to set a CIBP at 5840' and dump bail 10' of cement on top. A caliper and bond log will be run to determine casing integrity and top of cement. A Heath Sand completion will be attempted through perforations 4948'-70'. The Heath Sand was cored and DST'd during the 1956 drilling of EPU #101. The core analysis reveals fairly tight reservoir rock with fluorescence and the zone DST'd 2300' of clean oil (no water). As the Heath is not unitized, if the completion is successful a separate tank battery will have to be set and will be covered under a new AFE.

A 50 BOPD well will pay out the work itemized below in less than 1 month.

ESTIMATED COSTS

Rig-----	\$ 6,000
E-Line Work-----	10,000
Stimulation-----	3,000
Packer Redress-----	1,000
Hydrotest Tubing-----	1,000
Trucking-----	2,000
Supervision and Miscellaneous -----	<u>2,000</u>
Total Estimated Cost -----	<u>\$25,000</u>

APPORTIONMENT OF TOTAL ESTIMATED COST

MURPHY EXPRO	76.937788%	\$19,235
DOIL OIL & GAS	20.965647%	5,241
MUNOCO COMPANY	2.096565%	524

APPROVAL OF EXPENDITURE

Requested By:

Approved By:

RAY REEDE JUNE 18, 1997
 Ray Reede Date

[Signature] JUNE 18, 1997
 Date
[Signature] 6-18-97
 Date

A.F.E. No. 70401
OBJECT CODE: 232900
SUPPLEMENT NO. 1

MURPHY EXPLORATION AND PRODUCTION COMPANY
AUTHORITY FOR EXPENDITURE
EAST POPLAR UNIT NO. 101
NW NW Section 14, T28N, R51E
ROOSEVELT COUNTY, MONTANA

RECOMPLETE

PROPOSAL AND JUSTIFICATION:

The subject well was recompleted from the Madison "C-3" to the Heath Sand. The original AFE was overspent due to more cement work, stimulation and rig time took place than what was originally planned.

ESTIMATED COSTS

	<u>ORIGINAL</u>	<u>SUPPLEMENT</u>	<u>TOTAL</u>
Recompletion	\$25,000	\$71,000	\$96,000

APPORTIONMENT OF TOTAL ESTIMATED COST

		<u>ORIGINAL</u>	<u>SUPPLEMENT</u>	<u>TOTAL</u>
MURPHY EXPRO	76.937788%	\$19,235	\$54,625	\$73,860
DOIL OIL & GAS	20.965647%	5,241	14,886	20,127
MUNOCO COMPANY	2.096565%	524	1,489	2,013

APPROVAL OF EXPENDITURE

Requested By:

RR MAR 11, 98
Ray Reede Date

Approved By:

Bryon MacArthur MAR 11, 98
Date
Sidney W. Campbell 3-11-98
Date

EPU # 101

A.F.E. NO. _____
OBJECT CODE: _____

MURPHY EXPLORATION AND PRODUCTION COMPANY
AUTHORITY FOR EXPENDITURE
EAST POPLAR UNIT NO. 101
NW NW SECTION 14, T28N, R51E
ROOSEVELT COUNTY, MONTANA

PROPOSAL AND JUSTIFICATION:

EPU No. 101 is currently flowing from the Heath Sand Zone at the rate of 5 BOPD and 250 BWPD. It is proposed to set a 228 Lufkin unit on this well and pump with a 2" pump. With a 8 BOPD increase in production this should pay out in 6 months.

ESTIMATED COSTS

Rig-----	\$2,000
Water Truck-----	500
Roustabouts-----	1,500
Crane-----	1,000
Cement Base For Unit-----	2,500
Supervision and Miscellaneous-----	500
228 Lufkin Unit transferred from	
EPU No. 18 to EPU # 101-----	N/C
4000' of Sucker Rods transferred from	
EPU 3 57 to EPU # 101-----	N/C
Total Estimated Cost-----	\$8,000

APPROPORTIONMENT OF TOTAL ESTIMATED COSTS

MURPHY EXPRO	76.937788%	\$6,155
DOIL OIL & GAS	20.965647%	1,677
MUNOCO COMPANY	2.096565%	168

APPROVAL OF EXPENDITURE

Requested By:

Approved By:

Ray Reede 5-14-98
Ray Reede Date

Sidney Campbell _____
Date

RR/sb

(SUBMIT IN QUADRUPPLICATE)

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE BOARD.

TO

BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

JAN 1983

STATE OF MONTANA
BILLINGS

ARM 36.22.307
ARM 36.22.601
ARM 36.22.602
ARM 36.22.603
ARM 36.22.604
ARM 36.22.605

ARM 36.22.1003
ARM 36.22.1004
ARM 36.22.1013
ARM 36.22.1301
ARM 36.22.1306
ARM 36.22.1309

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans	X	Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	X	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

January 18, 1983

Following is a notice of intention to do work on land } owned } described as follows:
~~report of work done~~ } leased }

LEASE East Poplar Unit No. 101

MONTANA
(State)Roosevelt
(County)East Poplar Unit
(Field)

Well No. (m. sec.) 728N (Township) R51E (Range) Principal (Meridian)

The well is located 1228 ft. from N line and 1302 ft. from E line of Sec. 14.

LOCATE WELL SITE ACCURATELY ON PLAT ON BACK OF THIS FORM.

The elevation of the ground or K.B. above the sea level is 2181 K.B.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings, cementing points, and all other important proposed work, particularly all details of Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

It is proposed to kill the well, squeeze the C-3 Zone with 75 sacks of cement, and perforate the C-3 Zone from 5845' to 5851'. This well is currently producing 100% water out of the C-3 Zone.

Approved subject to conditions on reverse of form

Date FEB 28 1983

ORIGINAL SIGNED BY:

By W. S. Adolph, Field Representative

District Office Agent

Title

Company Murphy Oil Corporation

By ORIGINAL SIGNED BY

RAYMOND REEDE

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

BOARD USE ONLY API WELL NUMBER		
STATE	COUNTY	WELL
25		

NOTE:—Reports on this form to be submitted to the appropriate District for approval
 DRILLING PERMIT EXPIRES 90 DAYS FROM DATE OF APPROVAL. UPON WRITTEN
 REQUEST PRIOR TO EXPIRATION DATE, ONE 90 DAY EXTENSION MAY BE GRANTED.
 OVER

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil ☒ well gas ☐ well other ☐
2. NAME OF OPERATOR
Murphy Oil Corporation
3. ADDRESS OF OPERATOR
P.O. Box 547, Poplar Montana 59255
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
1220' from N line, 1320' from W line
AT SURFACE: 1228' from N line, 1302' from W line
AT TOP PROD. INTERVAL: of section 14
AT TOTAL DEPTH:

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:	SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF <input type="checkbox"/>	<input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	<input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	<input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	<input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	<input type="checkbox"/>
MULTIPLE COMPLETE <input type="checkbox"/>	<input type="checkbox"/>
CHANGE ZONES <input checked="" type="checkbox"/>	<input type="checkbox"/>
ABANDON* <input type="checkbox"/>	<input type="checkbox"/>
(other) <input type="checkbox"/>	<input type="checkbox"/>

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

It is proposed to kill the well, squeeze the C-5 Zone with 75 sacks of cement, and perforate the C-3 Zone from 5846'-5851'. This well is currently producing 100% water out of the C-5 Zone.

Subsurface Safety Valve: Manu. and Type _____

18. I hereby certify that the foregoing is true and correct

SIGNED ORIGINAL SIGNED BY TITLE Dist. Superintendent DATE January 19, 1983
RAYMOND REE
(This space for Federal or State office use)

APPROVED BY [Signature] TITLE ASSISTANT DISTRICT SUPERVISOR DATE 1/19/83
CONDITIONS OF APPROVAL, IF ANY:

1. No surface disturbance is to occur because of this work

5. LEASE	I-37-74-1228
6. IF INDIAN, ALLOTTEE OR TRIBE NAME	East Poplar Unit
7. UNIT AGREEMENT NAME	East Poplar Unit
8. FARM OR LEASE NAME	East Poplar Unit
9. WELL NO.	101
10. FIELD OR WILDCAT NAME	East Poplar Unit
11. SEC., T., R., M. OR BLK. AND SURVEY OR AREA	T28N, R31E, Section 14
12. COUNTY OR PARISH	Roosevelt
13. STATE	Montana
14. API NO.	
15. ELEVATIONS (SHOW DF, KDB, AND WD)	2181 K.R.

U. S. Geological Survey
(NOTE: Report results of multiple completion or zone change on this form.)

RECEIVED

JAN 25 1983

DICKINSON, N.D.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT" for such proposals.)

1. OIL WELL ☒ GAS WELL ☐ OTHER ☐

2. NAME OF OPERATOR
MURPHY OIL USA, INC.

3. ADDRESS OF OPERATOR
P.O. BOX 547, POPLAR, MT 59255

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.
See also space 17 below.)
At surface
1228' from North line and 1302' from West line

14. PERMIT NO. 15. ELEVATIONS (Show whether DF, RT, CR, etc.)
2181 KB

5. LEASE DESIGNATION AND SERIAL NO.
I-37-IND-12878

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Assinboine-Sioux

7. UNIT AGREEMENT NAME
East Poplar Unit

8. FARM OR LEASE NAME
East Poplar Unit

9. WELL NO.
101

10. FIELD AND POOL, OR WILDCAT
East Poplar Unit

11. SEC., T., R., M., OR BLE. AND SURVEY OR AREA
Section 14, T28N, R51E

12. COUNTY OR PARISH
Roosevelt

13. STATE
MT

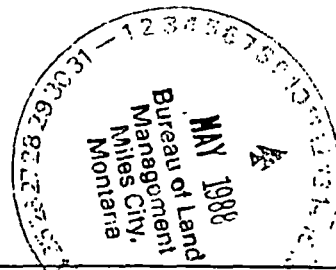
16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	<input type="checkbox"/>	WATER SHUT-OFF	<input type="checkbox"/>
FRACTURE TREAT	<input type="checkbox"/>	FRACTURE TREATMENT	<input type="checkbox"/>
SHOOT OR ACIDIZE	<input type="checkbox"/>	SHOOTING OR ACIDIZING	<input type="checkbox"/>
REPAIR WELL	<input type="checkbox"/>	(Other)	<input type="checkbox"/>
(Other) Change Zone	<input checked="" type="checkbox"/>	(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)	

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

EPU No. 101 is completed in the C-5 Zone 5891'-5896' and produces part time 99½% water.

It is proposed to squeeze the C-5 Zone with 75 sacks cement then perforate the C-3 Zone at 5846'-5851', swab test and acidize with 150 gallons 15% acid, if necessary.



18. I hereby certify that the foregoing is true and correct

SIGNED **ORIGINAL SIGNED BY** RAYMOND REEDE TITLE District Manager DATE 5-11-88

(This space for Federal or State office use)

APPROVED BY [Signature] TITLE ADM-MINERALS DATE MAY 12 1988

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

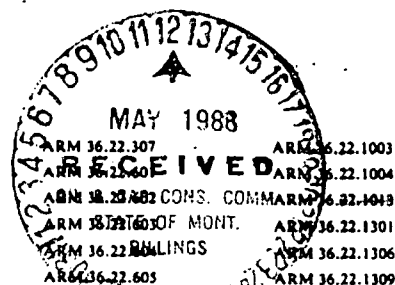
(SUBMIT IN QUADRUPPLICATE)

TO

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE BOARD.

**BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA**

BILLINGS OR SHELBURY

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill *		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
Change Zones	X		

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

May 11, 1988

Following is a ~~notice of intention to do work~~ on land ~~XXXXX~~ leased described as follows:

LEASE TYPE Indian
(Private, State, Federal, Indian)

LEASE East Poplar Unit 101

MONTANA
(State)

Roosevelt
(County)

East Poplar Unit
(Field)

Well No. 101 14 T28N R51E MPM
(m. sec.) (Township) (Range) (Meridian)

The well is located 1228 ft. from N XX line and 1302 ft. from XX W line of Sec. 14

* For notice of intention to drill, write the API* or the well name of another well on this lease if one exists

LOCATE WELL SITE ACCURATELY ON PLAT ON BACK OF THIS FORM.

The elevation of the ground or K.B. above the sea level is 2181 K.B.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings, cementing points, and all other important proposed work, particularly all details of Shooting, Acidizing, Fracturing.)

**DETAILS OF WORK
RESULT**

EPU No. 101 is completed in the C-5 Zone 5891'-5896' and produces part time 99% water.

It is proposed to squeeze the C-5 Zone with 75 sacks cement then perforate the C-3 Zone at 5846'-5851', swab test and acidize with 150 gallons 15% acid, if necessary.

Approved subject to conditions on reverse of form

Date MAY 13 1988
ORIGINAL COPY SIGNED BY:

By Floyd W. Podol, Field Supervisor
District Office Agent Title

Company MURPHY OIL USA, INC.

ORIGINAL SIGNED BY

By RAYMOND REEDETitle District ManagerAddress Box 547, Poplar, MT 59255

BOARD USE ONLY		
API WELL NUMBER		
STATE	COUNTY	WELL
28	0815	0156127

NOTE:—Reports on this form to be submitted to the appropriate District for approval.
DRILLING PERMIT EXPIRES SIX MONTHS FROM DATE OF APPROVAL.

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE BOARD.

(SUBMIT IN QUADRUPPLICATE)

TO

BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF SHELBY



ARM 36.22.307
ARM 36.22.601
ARM 36.22.602
ARM 36.22.603
ARM 36.22.604
ARM 36.22.605

ARM 36.22.1003
ARM 36.22.1004
ARM 36.22.1011
ARM 36.22.1301
ARM 36.22.1306
ARM 36.22.1309

Notice of Intention to Drill *		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	X	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

May 10, 1989

Following is a notice of intention to do work on land ~~XXXXXX~~ described as follows:
~~XXXXXX~~ leased

LEASE TYPE Indian
(Private, State, Federal, Indian)

LEASE East Poplar Unit No. 101

MONTANA
(State)

Roosevelt
(County)

East Poplar Unit
(Field)

Well No. 101 SW NW Sec. 14 T28N R51E MPM
(m. sec.) (Township) (Range) (Meridian)

The well is located 1220 ft. from N line and 1320 ft. from XX line of Sec. 14
XX W

* For notice of intention to drill, write the API* or the well name of another well on this lease if one exists _____

LOCATE WELL SITE ACCURATELY ON PLAT ON BACK OF THIS FORM.

The elevation of the ground or K.B. above the sea level is ...

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths in objective sands; show size, weights, and lengths of proposed casings, cementing points, and all other important proposed work, particularly all details of Shooting, Acidizing, Fracturing)

DETAILS OF WORK
RESULT

East Poplar Unit No. 101 is currently producing from the C-3 Zone
5846'-5'' at 3 BOPD and 61 BWPD. It is proposed to acidize this
well with 250 gallons 15% HCL acid

Approved subject to conditions on reverse of form

Date _____

By _____
District Office Agent Title

Company Murphy Oil USA, Inc.
ORIGINAL SIGNED BY

By RAYMOND REEDE

Title District Manager

Address P.O. Box 547, Poplar, MT 59255

BOARD USE ONLY		
API WELL NUMBER		
STATE	COUNTY	WELL
MT	185	0150127

NOTE:—Reports on this form to be submitted to the appropriate District for approval.
DRILLING PERMIT EXPIRES SIX MONTHS FROM DATE OF APPROVAL.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE
(Other instructions on reverse side)

Budget Form No. 1004-1
Expires August 31, 1985
5. LEASE DESIGNATION AND SERIAL

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT..." for such proposals.)

1. OIL WELL ☒ GAS WELL ☐ OTHER ☐
2. NAME OF OPERATOR
Murphy Oil USA, Inc.
3. ADDRESS OF OPERATOR
P.O. Box 547, Poplar, MT 59255
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.
See also space 17 below.)
At surface
1220' from North line 1320' from West Line
14. PERMIT NO.
15. ELEVATIONS (Show whether DP, RT, GR, etc.)

I-37-IND-12878
6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Fort Peck
7. UNIT AGREEMENT NAME
East Poplar Unit
8. FARM OR LEASE NAME
East Poplar Unit
9. WELL NO.
101
10. FIELD AND POOL, OR WILDCAT
East Poplar Unit
11. SEC., T., R., M., OR BLE. AND SURVEY OR AREA
SW NW Section 14,
T28N, R51E
12. COUNTY OR PARISH 13. STATE
Roosevelt MT

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

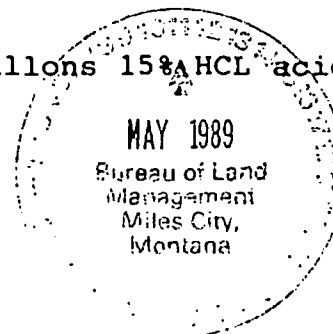
NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	<input type="checkbox"/>	WATER SHUT-OFF	<input type="checkbox"/>
FRACTURE TREAT	<input type="checkbox"/>	FRACTURE TREATMENT	<input type="checkbox"/>
SHOOT OR ACIDIZE	<input checked="" type="checkbox"/>	SHOOTING OR ACIDIZING	<input type="checkbox"/>
REPAIR WELL	<input type="checkbox"/>	(Other)	<input type="checkbox"/>
(Other)	<input type="checkbox"/>		
PULL OR ALTER Casing	<input type="checkbox"/>	REPAIRING WELL	<input type="checkbox"/>
MULTIPLE COMPLETION	<input type="checkbox"/>	ALTERING CASING	<input type="checkbox"/>
ABANDON*	<input type="checkbox"/>	ABANDONMENT*	<input type="checkbox"/>
CHANGE PLANS	<input type="checkbox"/>		

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

East Poplar Unit No. 101 is currently producing from the C-3 Zone 5846'-51' at 3 BOPD and 61 BWPD.

It is proposed to acidize this well with 250 gallons 15% HCL acid.



18. I hereby certify that the foregoing is true and correct

ORIGINAL SIGNED BY
SIGNED RAYMOND REEDE TITLE District Manager DATE 5-10-89
(This space for Federal or State office use)
APPROVED BY [Signature] TITLE ADM-Minerals DATE MAY 12 1989
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

70

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE*
(Other instructions on re-
verse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>		5. LEASE DESIGNATION AND SERIAL NO. I-37-IND-12878	
2. NAME OF OPERATOR MURPHY OIL USA, INC.		6. IF INDIAN, ALLOTTEE OR TRIBE NAME Assinboine-Sioux	
3. ADDRESS OF OPERATOR P.O. BOX 547, POPLAR, MT 59255		7. UNIT AGREEMENT NAME East Poplar Unit	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface 1228' from North line and 1302' from West line		8. FARM OR LEASE NAME East Poplar Unit	
14. PERMIT NO.		9. WELL NO. 101	
15. ELEVATIONS (Show whether OF, BT, GR, etc.) 2181 KB		10. FIELD AND POOL, OR WILDCAT East Poplar Unit	
		11. SEC., T., R., M., OR B.L. AND SURVEY OR AREA Section 14, T28N, R51E	
		12. COUNTY OR PARISH Roosevelt	
		13. STATE MT	

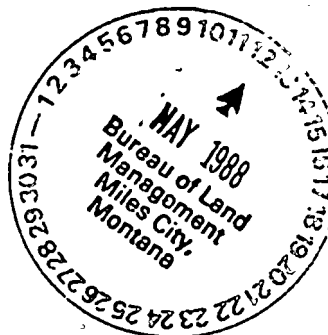
16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANE <input type="checkbox"/>	(Other) <input type="checkbox"/>	(Other) <input type="checkbox"/>
(Other) Change Zone <input checked="" type="checkbox"/>		(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)	

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

EPU No. 101 is completed in the C-5 Zone 5891'-5896' and produces part time 99½% water.

It is proposed to squeeze the C-5 Zone with 75 sacks cement then perforate the C-3 Zone at 5846'-5851', swab test and acidize with 150 gallons 15% acid, if necessary.



18. I hereby certify that the foregoing is true and correct

SIGNED <u>Raymond Reedle</u>	TITLE <u>District Manager</u>	DATE <u>5-11-88</u>
(This space for Federal or State office use)		
APPROVED BY <u>[Signature]</u>	TITLE <u>ADM-MINERALS</u>	DATE <u>MAY 12 1988</u>
CONDITIONS OF APPROVAL, IF ANY:		

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE
(Other instructions on re-
verse side)

Budget Bureau No. 1004-0135
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT" for such proposals.)

1. ☐ OIL WELL ☒ GAS WELL ☐ OTHER

2. NAME OF OPERATOR
Murphy Oil USA, Inc.

3. ADDRESS OF OPERATOR
P.O. Box 547, Poplar, MT 59255

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.
See also space 17 below.)
At surface
1220' from North line and 1320' from the West line

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, WT, GR, etc.)

5. LEASE DESIGNATION AND SERIAL NO
I-37-IND-12878

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Fort Peck

7. UNIT AGREEMENT NAME
East Poplar Unit

8. FARM OR LEASE NAME
East Poplar Unit

9. WELL NO.
101

10. FIELD AND POOL, OR WILDCAT
East Poplar Unit

11. SEC., T., S., M., OR BLE. AND SURVEY OR AREA
SW NW Section 14, T28N, R51E

12. COUNTY OR PARISH
Roosevelt

13. STATE
MT

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Injected 250 gallons HOWCO 15% PM 88 acid into C-3 perforations at 5846'-51'. Initial production is 17 BOPD and 290 BWPD.

18. I hereby certify that the foregoing is true and correct

SIGNED Raymond Reed

TITLE District Manager

DATE June 9, 1989

(This space for Federal or State office use)

APPROVED BY David E. Dungan

TITLE ADM-Minerals

DATE JUN 14 1989

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

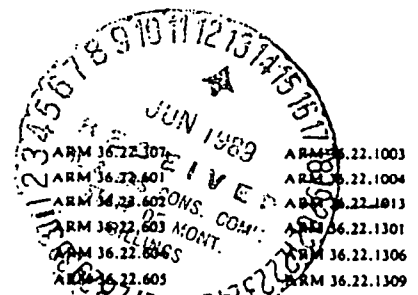
(SUBMIT IN QUADRUPLICATE)

TO

BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA

BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS



NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE BOARD.

Notice of Intention to Drill *		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	X
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

June 9, 1989

Following is a ~~XXXXXXXXXXXXXXXXXXXX~~ on land ~~XXXXXX~~ described as follows:
report of work done leased

LEASE TYPE Indian

(Private, State, Federal, Indian)

LEASE East Poplar Unit 101

MONTANA

(State)

Roosevelt

(County)

East Poplar Unit

(Field)

Well No. 101 14 T28N R51E MPM
(m. sec.) (Township) (Range) (Meridian)The well is located 1220 ft. from ~~N~~ line and 1320 ft. from ~~W~~ line of Sec. 14

* For notice of intention to drill, write the API# or the well name of another well on this lease if one exists

LOCATE WELL SITE ACCURATELY ON PLAT ON BACK OF THIS FORM.

The elevation of the ground or K.B. above the sea level is

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings, cementing points, and all other important proposed work, particularly all details of shooting, acidizing, fracturing.)

DETAILS OF WORK
RESULT

Injected 250 gallons HOWCO 15% Pen 88 acid into C-3 perforations at
5346' - 54'. Initial production is 17 BOPD and 290 BWFD.

Approved subject to conditions on reverse of form

Date

By District Office Agent Title

Company Murphy Oil USA, Inc.

By Raymond Reede

Title District Manager

Address P.O. Box 547, Poplar, MT 59255

BOARD USE ONLY
API WELL NUMBER

STATE	COUNTY	WELL
MT	BLAINE	101

NOTE:—Reports on this form to be submitted to the appropriate District for approval.
DRILLING PERMIT EXPIRES SIX MONTHS FROM DATE OF APPROVAL

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE
(Other instructions on reverse side)

Budget Bureau No. 1004-0130
Expires August 31, 1985
5. LEASE DESIGNATION AND SERIAL NO.

I-37-IND-12878

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT" for such proposals.)

1. OIL WELL ☒ GAS WELL ☐ OTHER ☐

2. NAME OF OPERATOR

Murphy Oil USA, Inc.

3. ADDRESS OF OPERATOR

P.O. Box 547, Poplar, MT 59255

4. LOCATION OF WELL (Report location clearly and in accordance with any State Management. See also space 17 below.)
At surface

1220' from North line and 1320' from the West line

14. PERMIT NO.

15. ELEVATIONS (Show whether OF, BT, OR, etc.)

16. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATES SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Injected 250 gallons HOWCO 15% PM 88 acid into C-3 perforations at 5846'-51'. Initial production is 17 BOPD and 290 BWPD.

18. I hereby certify that the foregoing is true and correct

SIGNED Raymond Reed

TITLE District Manager

DATE June 9, 1989

(This space for Federal or State office use)

APPROVED BY Donald E. Dinger
CONDITIONS OF APPROVAL, IF ANY:

TITLE ADM-Minerals

DATE JUN 14 1989

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMH No. 110M-0135
Expires July 31, 1996

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other Instructions on reverse side

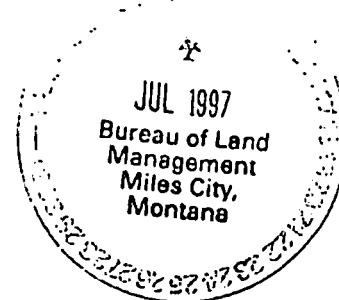
1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		5. Lease Serial No. I-37-IND-12878
2. Name of Operator Murphy Exploration & Production Company		6. If Indian, Allottee or Tribe Name Fort Peck
3a. Address P.O. Box 547, Poplar, Mt	3b. Phone No. (include area code) 406+768-3612	7. If Unit or CA/Agreement, Name and/or No. East Poplar Unit
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) SW NW Section 14, T28N, R51E 1220' from the North line and 1320' from the West line		8. Well Name and No. EPU No. 101
		9. API Well No. 25-085-05027
		10. Field and Pool, or Exploratory Area East Poplar Unit
		11. County or Parish, State Roosevelt, Mt.

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input checked="" type="checkbox"/> Recomplete	<input type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleation in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

It is proposed to set a CIBP at 5840' and dump bail 10' of cement on top. A Caliper and Bond Log will be run to determine casing integrity and top of cement. The Heath Sand will be perforated at 4948-4970'. The well will be acidized if necessary.



14. I hereby certify that the foregoing is true and correct
Name (Printed/Typed)

Raymond Reede

Signature

Raymond Reede

Title

District Manager

Date

July 10, 1997

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Charles E. Laake

Title

TEAM LEADER

Date

JUL 14 1997

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

See Attached for
Conditions of Approval

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

OP

Form 2
Rev. 8-92

Submit In Quadruplicate To:

Montana Board of Oil and Gas Conservation

Billings or Shelby

ARM 36.22.307,
1003, 1004, 1011,
1013, 1103, 1222,
1301, 1306, and 1309

Sundry Notices and Reports of Wells

Operator

Murphy Exploration and Production Company

Address

P.O. Box 547

City

State

Zip Code

Poplar, Montana 59255

Telephone Number (406) 768-3612 Telefax Number (406) 768-5497

Well Name:

East Poplar Unit

Lease Type (Private/State/Federal):

Indian

Well Number:

No. 101

Unit Agreement Name:

East Poplar Unit

Field Name or Wildcat:

East Poplar Unit

Section, Township, and Range:

SW NW Section 14,
T28N, R51E

County:

Roosevelt

API Number:

25 0 8 5 0 5 0 2 7

Well Type (oil, gas, injection, other):

Oil

Indicate below with an X the nature of this notice, report, or other data:

Notice of Intention to Change Plans ☐

Notice of Intention to Run Mechanical Integrity Test ☐

Notice of Intention to Stimulate or to Chemically Treat ☐

Notice of Intention to Perforate or to Cement ☒

Notice of Intention to Abandon Well ☐

Notice of Intention to Pull or Alter Casing ☐

Notice of Intention to Change Well Status ☐

Supplemental Well History ☐

Other (specify) ☐

Subsequent Report of Mechanical Integrity Test ☐

Subsequent Report of Stimulation or Chemical Treatment ☐

Subsequent Report of Perforation of Cementing ☐

Subsequent Report of Well Abandonment ☐

Subsequent Report of Pulled or Altered Casing ☐

Subsequent Report of Drilling Waste Disposal ☐

Subsequent Report of Production Waste Disposal ☐

Subsequent Report of Change in Well Status ☐

Subsequent Report of Gas Analysis (ARM 36.22.1222) ☐

Describe Proposed or Completed Operations:

Describe planned or completed work in detail. Attach maps, well-bore configuration diagrams, analyses, or other information as necessary. Indicate the intended starting date for proposed operations or the completion date for completed operations.

It is proposed to set a CIBP at 5840' and dump bail 10' of cement on top. A Caliper and Bond Log will be run to determine casing integrity and top of cement. The Heath Sand will be perforated at 4948-4870'. The well will be acidized if necessary.

BOARD USE ONLY

Approved

JUL 16 1997

Date

Accepted for record purposes only

Name

Title

The undersigned hereby certifies that the information contained on this application is true and correct:

July 10, 1997

Date

Signed (Agent)

Raymond Reede District Manager

Print Name & Title

Form 2
Rev. 8-92

Submit In Duplicate To:
Montana Board of Oil and Gas Conservation
Billings or Shelby Office

ARM 36.22.307,
1003, 1004, 1011,
1013, 1103, 1222,
1301, 1306, and 1309

Sundry Notices and Report of Wells

Operator
Murphy Exploration and Production Company

Address

P.O. Box 547

City

State

Zip Code

Poplar

Mt

59255

Telephone Number (406) 768-3612 Telefax Number (406) 768-5497

Lease Name:

East Poplar Unit

Lease Type (Private/State/Federal):

Indian

Well Number:

No. 101

Unit Agreement Name:

East Poplar Unit

Field Name or Wildcat

East Poplar Unit

Section, Township, and Range:

SW NW Section 14,
T28N, R51E

County:

Roosevelt

Location of well (1/4-1/4 section and footage measurements):

1220' from the North line and 1320' from the
West Line

If directionally or horizontally drilled, show both surface and bottom hole locations)

API Number:

25 0 8 5 0 5 0 2 7

State County Well

Well Type (oil, gas, injection, other):

Oil

Indicate below with an X the nature of this notice, report, or other data:

Notice of Intention to Change Plans ☐
Notice of Intention to Run Mechanical Integrity Test ☐
Notice of Intention to Stimulate or to Chemically Treat ☐
Notice of Intention to Perforate or to Cement ☐
Notice of Intention to Abandon Well ☐
Notice of Intention to Pull or Alter Casing ☐
Notice of Intention to Change Well Status ☐
Supplemental Well History ☐
Other (specify) ☐

Subsequent Report of Mechanical Integrity Test ☐
Subsequent Report of Stimulation or Chemical Treatment ☐
Subsequent Report of Perforation of Cementing ☒
Subsequent Report of Well Abandonment ☐
Subsequent Report of Pulled or Altered Casing ☐
Subsequent Report of Drilling Waste Disposal ☐
Subsequent Report of Production Waste Disposal ☐
Subsequent Report of Change in Well Status ☐
Subsequent Report of Gas Analysis (ARM 36.22.1222) ☐

Describe Proposed or Completed Operations:

Describe planned or completed work in detail. Attach maps, well-bore configuration diagrams, analyses, or other information as necessary. Indicate the intended starting date for proposed operations or the completion date for completed operations.

Set CIBP at 5840'. Make 2 trips with Gump bailer. Perforate 4946-4970',
2 SPF. Acidize with 750 gallons 15% Hydrochloric acid with additives.
Swab tested at 99 to 100% water. Squeezed perforations with 50 sacks
cement with additives. Stage cement with maximum pressure of 2300#.
Reverse out 25 barrels fluid, no cement. Perforate 4959-4970' and
4948-4959'. Frac perforations using water, Boragel and sand. Well
flowing.

Workover Potential 5 BOPD 242 BWPD 98% Water

BOARD USE ONLY

Approved OCT 30 1997

Date

Accepted for record purposes only

Original Signed by Jon H. Johnson, Chief Field Inspector

Name

Title

The undersigned hereby certifies that the information contained
on this application is true and correct:

October 27, 1997 Raymond Reede

Date

Signed (Agent)

Raymond Reede

District Manager

Print Name & Title

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
Expires July 31, 1996

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other Instructions on reverse side

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		5. Lease Serial No. I-37-IND-12878
2. Name of Operator Murphy Exploration & Production Company		6. If Indian, Allottee or Tribe Name Fort Peck
3a. Address P.O. Box 547, Poplar, Mt	3b. Phone No. (include area code) 406+768-3612	7. If Unit or CA/Agreement, Name and/or No. East Poplar Unit
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) SW NW Section 14, T28N, R51E 1220' from the North line and 1320' from the West line		8. Well Name and No. EPU No. 101
		9. API Well No. 25-085-05027
		10. Field and Pool, or Exploratory Area East Poplar Unit
		11. County or Parish, State Roosevelt Montana

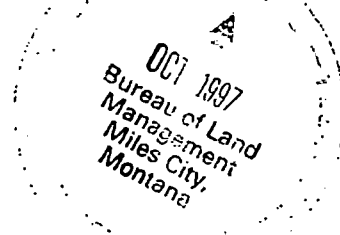
12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input checked="" type="checkbox"/> Recomplete	<input type="checkbox"/> Other _____
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleation in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Set CIBP at 5840'. Make 2 trips with dump bailer. Perforate 4948-4870', 2 SPF. Acidize with 750 gallons 15% Hydrochloric acid with additives. Swab tested at 99 to 100% water. Squeezed perforations with 50 sacks cement with additives. Stage cement with maximum pressure of 2300#. Reverse out 25 barrels fluid, no cement. Perforate 4959-4970' and 4948-4959. Frac perforations using water, Boragel and sand. Well flowing.

Workover Potential 5 BOPD 242 BWPD 98% Water



14. I hereby certify that the foregoing is true and correct Name (Printed/Typed) Raymond Reede		Title District Manager
Signature <i>Raymond Reede</i>		Date October 27, 1997

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by <i>Naive M... ..</i>	Title TEAM LEADER	Date NOV 6 1997
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on reverse)

OP

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
Expires July 31, 1996

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other Instructions on reverse side

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator
Murphy Exploration & Production Company

3a. Address
P.O. Box 547, Poplar, Mt

3b. Phone No. (include area code)
406+768-3612

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
**SW NW Section 14, T28N, R51E
1220' from the North line and 1320' from the West line**

5. Lease Serial No.
I-37-IND-12878

6. If Indian, Allottee or Tribe Name
Fort Peck

7. If Unit or CA/Agreement, Name and/or No.
East Poplar Unit

8. Well Name and No.
EPU No. 101

9. API Well No.
25-085-05027

10. Field and Pool, or Exploratory Area
East Poplar Unit

11. County or Parish, State
Roosevelt Montana

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input checked="" type="checkbox"/> Recomplete	<input type="checkbox"/> Other _____
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleation in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Set CIBP at 5840'. Make 2 trips with dump bailer. Perforate 4948-4870', 2 SPF. Acidize with 750 gallons 15% Hydrochloric acid with additives. Swab tested at 99 to 100% water. Squeezed perforations with 50 sacks cement with additives. Stage cement with maximum pressure of 2300#. Reverse out 25 barrels fluid, no cement. Perforate 4959-4970' and 4948-4959. Frac perforations using water, Boragel and sand. Well flowing.

Workover Potential 5 BOPD 242 BWPD 98% Water

OCT 1997
Bureau of Land
Management
Miles City,
Montana

14. I hereby certify that the foregoing is true and correct
Name (Printed/Typed)

Raymond Reede

Title

District Manager

Signature

Raymond Reede

Date

October 27, 1997

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Paul Bruck

Title

TEAM LEADER

Date

NOV 6 1997

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

GEOLOGICAL DATA

DEC 16 1957

U. S. GEOLOGICAL SURVEY
BILLINGS, MONTANABudget Bureau No. 12-RMA-1
Approval expires 12-31-58

U. S. LAND OFFICE

SERIAL NUMBER

LEASE OR PERMIT TO PROSPECT

UNITED STATES

DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

LOCATE WELL CORRECTLY

LOG OF OIL OR GAS WELL

Company **Murphy Corporation** Address **Poplar, Montana**
 Lessor or Tract **1-37-Ind-12878** Field **East Poplar** State **Montana**
 Well No. **101** Sec. **14** T. **28N** R. **51E** Meridian **N.P.M.** County **Roosevelt**
 Location **1220** ft. **S.** of **Line and 1320** ft. **W.** of **Line of Section 14** Elevation **2781'**
 (Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed **ORIGINAL SIGNED BY M. T. JAMES**
Field Production Supt.

Date **December 11, 1957**

Title

The summary on this page is for the condition of the well at above date.

Commenced drilling **October 21**, 19**57** Finished drilling **December 7**, 19**57**

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from _____ to _____ No. 4, from _____ to _____
 No. 2, from _____ to _____ No. 5, from _____ to _____
 No. 3, from _____ to _____ No. 6, from _____ to _____

IMPORTANT WATER SANDS

No. 1, from _____ to _____ No. 3, from _____ to _____
 No. 2, from _____ to _____ No. 4, from _____ to _____

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated		Purpose
							From—	To—	
9-5/8	32.30	8rd.	Amer.	1078.58	Horse Head Shoe				Surface
5-1/2	15.50	8rd.	Amer.	6216.50	Horse Head Shoe				Long string

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Kind of mud	Amount of mud used
9-5/8	1088.33	100	Pump & Plug		
5-1/2	6255.00	200	Pump & Plug		

PLUGS AND ADAPTERS

Heavy plug Material _____ Length _____ Depth set _____

Adapters Material _____ Size _____

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out
SEE ATTACHED SHEETS						

TOOLS USED

Rotary tools were used from 0 feet to 255 feet, and from _____ feet to _____ feet

Cable tools were used from _____ feet to _____ feet, and from _____ feet to _____ feet

DATES

Put to producing December 7 57
I.P. December 10 57

The production for the first 24 hours was 268 barrels of fluid of which 99.8% was oil; _____% emulsion; .2% water; and _____% sediment. Gravity, °Bé. 40.2 at 60 degrees

If gas well, cu. ft. per 24 hours _____ Gallons gasoline per 1,000 cu. ft. of gas _____

Rock pressure, lbs. per sq. in. _____

EMPLOYEES

Zach Brooks Drilling Company, Driller _____, Driller

FORMATION RECORD

FROM-	TO-	TOTAL FEET	FORMATION
SEE ATTACHED SHEETS			
SEE ATTACHED SHEETS			
FOR U.S. GOVERNMENT USE ONLY			
FROM-	TO-	TOTAL FEET	FORMATION

FORMATION RECORD—Continued

RECEIVED

Poplar

WELL DRILLING PLAN

Field or Area East Poplar Division Billings

County Roosevelt Total Anticipated Depth 5880'

Lease East Poplar Unit Well Name East Poplar Unit Well No. 101

Location SW NW Section 14-T28N-R51E

Lowest fresh water sand (for surface casing program): 90'

Casing and tubing program:

	<u>From</u>	<u>To</u>	<u>Size</u>	<u>Weight</u>	<u>Grade</u>	<u>Bit Size</u>
Conductor						
Surface	<u>0</u>	<u>1000'</u>	<u>9-5/8"</u>	<u>36#</u>	<u>J-55</u>	<u>12-1/4"</u>
Intermediate						
Production	<u>0</u>	<u>5880'</u>	<u>5-1/2"</u>	<u>15.50#</u>	<u>J-55</u>	<u>8-3/4"</u>
Tubing	<u>0</u>	<u>5880'</u>	<u>2-7/8"</u>	<u>6.40#</u>	<u>J-55</u>	<u>E.U.E.</u>

Potential Drilling Hazards Gas and water flow in the Judith River.

Mud Program Drill surface hole with fresh water and allow mud weight to build to approximately 10#. Use native mud and fresh water under surface to 4000'. Convert to gyp mud to drill through the pay sections.

Coring Method and Size Core Bits to be used 6-1/8" Diamond

Intervals Cores to be analyzed All porosity with show.

Method of Drill Stem Testing 2 hour tests

Anticipated Completion Zone "B" Zones

Method of opening pay, perforation or open hole, and approximate interval: Perforate

Expected Formation Treatments 1000 gallons of etching acid

Expected logs for Development, Evaluation, or Completion Purposes A Gamma Ray-Neutron will be run inside production casing from 3000' to T.D., in addition to the logs noted on the Geological Prospectus.

Remarks:

Date 6-10-57

Production Superintendent Harold Thilman
29

HM:eh

8p010101

TO: District Engineer, U.S. Geological Survey

FROM: Mr. J. E. Gagnier, Chief, Murphy Oil Company, Inc., Tulsa, Oklahoma

SUBJECT: Oil Spill

DATE: January 27, 1983

1- Bureau of Indian Affairs, Poplar, Montana

-----Nipple on the well head froze and cracked, letting oil squirt into the air.

East Poplar Unit #101

C NW 1/4 Section 14, T28N, R51E, Roosevelt County, Montana

(OWNER) Ft. Peck Allotted Indian Land, Allotment 480

Crude oil squirted straight up in the air and covered the snow on the

location and adjoining area, 8 to 10 barrels were discharged.

January 27, 1983, 7 A.M.

Well was shut in immediately upon finding the spill.

A new high pressure nipple was installed on the well head.

Oily snow was pushed into a pile and burned.

Manufacturer unknown - 1/2" 5000# working pressure, 12-9-1959-

to screw gauge in well head. Froze up and busted.

Bureau of Indian Affairs, Poplar, Montana

Fort Peck Tribal Research

Raymond Reede

February 2, 1983

District Superintendent

EAST POPLAR UNIT WELL NO. 101

COMPLETION DATA

Casing Program:

- 10-23-57 1100' - Ran 33 jts. (1078.58') of 9-5/8", 32#, 8rd. thd., ST&C, R-2, American Class 1 casing. Landed 9.75' below RKB and set with Howco float shoe at 1088.33'. 1 Howco centralizer at 1073'. Circulated 30 minutes. Cemented with 400 sacks of regular cement with 2% gel. Clean cement to surface. Bumped plug with 1000# at 10:10 P.M., float held ok.
- 10-24-57 1100' - Tested casing and blow out preventors at 1000#, held ok.
- 11-27-57 6255' TD - Ran 178 jts. (6246.50') of 5-1/2", 15.50#, J-55, 8rd. thd., R-2 & 3, ST&C, American casing. Landed 8.50' below RKB and set at 6255.00'. Ran Howco automatic fillup shoe at 6255'. Howco baffle collar at 6225'. Ran 117 B&W scratchers as follows: 10' apart from T.D. to 6036'; 20' apart from 6063' to 5963'; 10' apart from 5963' to 5895'; 5' apart from 5895' to 5653'; 15' apart from 5653' to 5587'; 5' apart from 5587' to 5524'; 15' apart from 5246' to 5204'; 5' apart from 5030' to 4960'; 15' apart from 4960' to 4860'. Ran B&W centralizers as follows: 6240', 6097', 5896', 5737', 5587', 5496', 5246', 5096' and 4962'. Circulated 40 minutes before cementing. Ran 20 barrels fresh water ahead of cement. Cemented with 200 sacks Pozmix 1.1, 4% gel and 200 sacks Pozmix 1.1, 2% gel and 22% salt. Reciprocated casing 35' throughout cementing. Good circulation throughout cementing. Bumped plug with 1500# psi. Released pressure; float held ok. Plug down at 2:10 A.M., 11-28-57. Mud dropped after plug was down.
- 11-28-57 6218' PBTD - Ran Lane Wells Gamma Ray-Neutron log. Ran Lane Wells Temperature Survey. Top of cement at 4810'. Released rig at 3:00 P.M., 11-28-57. To complete with pulling unit.
- 11-29-57 6218' PBTD - Waiting on cement. Moving off rig.
- 11-30-57 6218' PBTD - Will move in pulling unit today.
- 12-1-57 6218' PBTD - Tested 5-1/2" casing and blow out preventors with 2000#, held ok. Perforated Fast Zone from 6173' to 6181' with Wireline karat-free gun, 4 holes per foot. Ran junk basket, ran Baker Model "D" production packer. Set packer at 6166'. Ran 2-3/8" tubing with Baker seal assembly 5' tail pipe. Swabbed tubing dry. Let set 1 hour. Made dry run with swab. No apparent fluid movement.
- 12-2-57 6158' PBTD - Acidized Fast Zone perforation 6173'-6181' with 1000 gallons of Dowell etching acid. Formation broke at 2500# psi. Maximum injection rate of 2.5 BPM at 1400# psi. Bleed down pressure 750# psi. Opened to pit, spent acid to surface in 15 minutes. Flowed to pit 1 hour, 100% water. Turned to test tank. On 1 hour test, open flow, flowed at rate of 1642 BFPD, 100% water. TFP--100#. 1 hour test, 1/4" choke, flowed

Completion Data Continued

at rate of 793 BFPD, 100% water. Squeeze job. Squeezed perforation 6173'-6182' with 75 sacks regular cement with 0.3 HR 4 retarder. Began staging cement with 55 sacks out. Made 6 - 1 minute stages. Squeezed and held at 2100 psi with 70 sacks out. Left 8' cement on top of packer. Reversed out 3 sacks. Job complete at 5:15 P.M. Pulled tubing. Tested squeeze and BOP with 2500# psi. Held ok. Perforated Fast Zone 6110'-6120' and 6094'-6104' with Wireline Karat-free gun, 4 holes per foot. Ran Baker junk basket. Set Model "D" production packer on Wireline. Top of packer at 6088'. Ran tubing with Baker seal assembly 5' tail pipe. Swabbed tubing dry. Let set 30 minutes. Recovered 500' of fluid fillup. Will continue swabbing to determine water cut of fluid.

12-3-57

6078' PBTB - Swabbed 3 hours at rate of 18 BFPD, 100% water. Acidized Fast Zone, 6110'-6120' and 6094'-6104' with 1000 gallons of Dowell etching acid. Formation broke at 1400# psi. Maximum injection rate of 5 BPM at 2200# psi. Bleed down pressure 800# psi. Opened to pit at 12:11 P.M. Spent acid to surface in 36 minutes. Flowed to pit 1 hour, then switched to test tank. On 2 hour test, open flow, flowed at rate of 821 BFPD, 100% water. Squeezed Fast Zone perforation 6094'-6104' and 6110'-6120' with 100 sacks of regular cement with HR-4 retarder. Broke formation with 1050# psi. Squeezed 85 sacks cement out in formation. Maximum squeeze pressure 4000# psi, held ok. Left 1 sack cement on top of Baker Model "D" production packer. Reversed out 14 sacks. Job complete at 6:30 P.M., 12-3-57. Pulled tubing and dressed Baker seal assembly. Tested squeeze and BOP with 2500# psi, held ok. Perforated from 5904' to 5914' with Wireline's Karat-free casing gun, 4 holes per foot. Ran Baker junk basket. Ran Baker Model "D" production packer on wireline. Top of packer set at 5898'. Ran tubing with Baker seal assembly and 5' of tail pipe. Swabbed tubing down to 4500'. Unable to get swab any lower. No apparent fluid movement. Swab line stander, repaired same.

12-4-57

6078' PBTB - Swabbed down 4500'. Waited 1 hour, made dry run with swab. Acidized perforation 5904'-5914' with 1000 gallons Dowell etching acid. Filled tubing with acid. Broke formation with 4.5 barrels water left in tubing at 850 psi. Injected water at rate of 2 BPM at 1250 psi. Injected acid at rate of 2.6 BPM at 1000 psi. Bleed down pressure 200 psi. Opened to pit. Spent acid to surface in 12 minutes with show of oil. Flowed to pit 30 minutes, 80 to 90% muddy salt water, then switched to test tank. On 30 minute test on open flow, flowed at rate of 3283 BFPD, 85% muddy salt water (492 BOPD, 2791 BWPB). 30 minute test on 1/4" choke, flowed at rate of 768 BFPD, 92% water, TFP-450#, (61 BOPD, 707 BWPB). Chlorides 40,000 PPM. Gravity of oil 38.9 at 60 degrees. Flowed 4 hours, 1/4" choke, average flow rate 767 BFPD, water cut increased to 96% water (on water draw) 30 BOPD, 737 BWPB, TFP-450#. Flowed 12 hours, 12/64" choke, average flow rate 428 BFPD, 96% water (17 BOPD, 411 BWPB), TFP-475#.

12-5-57

5898' PBTB - Squeezed perforation 5904'-5914' with 100 sacks of

Completion Data Continued

Pozmix, 4% gel. Broke formation with 1050# psi. Pumped 100 sacks cement out in formation. Maximum pressure 1050# psi and would not hold. Cleared tool with 4 barrels water and let set 3 hours. Squeeze #2 on perforation 5904'-5914' with 100 sacks regular cement, 4% HR-4 retarder. Broke formation with 1100# psi. Squeezed 90 sacks cement out in formation. Reversed out 10 sacks. Job complete at 2:30 P.M. Pulled tubing to perforate and dress Baker seal assembly. Tested squeeze and BOP with 2500# psi, held ok. Perforated from 5891'-5896' with Lane Wells Karat-free casing gun, 4 holes per foot. Ran Baker junk basket. Set Baker Model "D" production packer on Lane Wells wireline. Top of packer at 5884'. Ran tubing with Baker seal assembly and 5' tail pipe. Started swabbing tubing and casing went vacuum. Indicated leak in tubing, seal assembly, or packer. Coming out of hole with tubing to repair leak.

- 12-6-57 5898' PBTD - Layed down 50 jts. of 2-3/8" tubing with cement on the ID walls and 3 bad collars. Tested tubing, casing and head with 2200#, held ok. Broke formation with salt water at 2200#. Injected 2 barrels of salt water at 2200# at 1 BPM. Open to pit, flowed small stream, swabbed dry, no fluid movement. Acidized perforation 5891'-5896' with 500 gallons Dowell etching acid, broke formation with 2200#, broke back to 1000# with injection rate of 3 BPM, bleed down 200#. Flowed spent acid to surface in 10 minutes, flowed to pit 5 more minutes, 18/64" choke for 5 minutes, 15% acid and salt water. 1/4" choke for 15 minutes, 10% acid and salt water. Tested on 1/4" choke for 30 minutes, only flowed at the rate of 72 BFPH equals 1724 BFPD, 1 to 2% BS&W, TFP=900#, TSIP=1000#.
- Tested:
1 hour, 8/64" choke, 13 BOPH, 1/10 of 1% BS&W, equals 312 BOPD, TFP=1000#.
1 hour, 10/64" choke, 27 BOPH, 1/10 of 1% BS&W, equals 648 BOPD, TFP=1000#.
1 hour, 9/64" choke, 26 BOPH, 1/10 of 1% BS&W, equals 624 BOPD, TFP=1025#.
- Flowed 10 hours, 8/64" plus choke, average 17 BOPH, 1/10 of 1% BS&W equals 408 BOPD, TFP=1025#, shut in at 7:45 A.M., 12-7-57 for BHP, oil 40.2 gravity at 60 degrees.
- 12-7-57 5898' PBTD - Shut in for bottom hole pressure.
- 12-8-57 5898' PBTD - Ran BHP on perforation 5891'-5896' after shut in 26 hours. BHP datum of -3600', 2900 psi, temperature 241 degrees, top pressure 916 psi. (Field calculated, subject to correction.) Open to "H" Battery at 3:30 P.M., 12-8-57. Flowed on 8/64" choke for 4 hours to fill flow-line and stabilize, tested 9 hours on 7/64" choke, flow rate 288 BFPD, .02 of 1% BS&W, TFP=1075#. Note no visible difference in characteristics of EPU No. 9 "C" Zone oil and oil from EPU No. 101, perforation 5891'-5896'.
- 12-9-57 5898' PBTD - Flowed 12 hours, 7/64" choke, flow rate 285 BFPD, .02 of 1% BS&W, TFP=1075#, old gauge. Tested 10 hours, 6/64" choke, flow rate 137 BFPD, .02 of 1% BS&W, TFP=980#, new gauge.

Completion Data Continued

12-10-57 5898' FBTD - Tested the "C-5" Zone 21 hours. Flowed at rate of 268 BFPD, .2 of 1% BS&W, 7/64" choke, TFP--985#. This is the initial potential test. To drop from report.

Completion Data Continued (Tubing Record)

Tubing Record: 2-3/8", 4.70#, J-55, EUE, Class 2

Below RKB	7.25'	
Top Joint	30.80'	
1 sub	2.00'	
191 jts.	5846.55'	
Seating nipple (1-25/32")	.80'	
Baker Locator sub	.40'	
Top Packer	5887.80'	= 5884' Lane Wells
Baker #40 Seal Assembly		
with 2 sets seals	2.26'	
Tail pipe	5.00'	
Bottom of tubing	5895.06'	= 5891.26' Lane Wells

EAST POPLAR UNIT WELL NO. 101

SURFACE EQUIPMENT RECORD

1. Well Head:

1 - Cameron 10", Series 600 x 9-5/8", 8rd. thd., Type WF Casing Head with 2 - 2" outlets, 1 - 2" Cameron L.P. valve, 2000# W.P., 1 - 2" x 8" nipple and 1 - 2" bull plug.

1 - 10" x 5-1/2" Cameron Type CA automatic casing hanger, complete

1 - 10", Series 600 x 6" Cameron Type W.F. tubing head with 2 - 2" F.E. side outlets, 1 - 2" bull plug, 1 - 2", 2000# W.P. gate valve.

1 - 2", 4000# Test Type JELP flow control with adjustable choke.

2. Lifting Equipment: None

3. Compressor, other Installation: None

4. Storage Facilities: Oil produced goes into East Poplar Unit "H" Battery

5. Flowline: Approximately 3400' of 3", 6.58#, R-3, P.E. Line Pipe.

EAST POPLAR UNIT WELL NO. 101

SUB-SURFACE EQUIPMENT RECORD

1. Packers: 4 Baker Model "D" Production Packers
2. Depth Installed: 6166', 6088', 5898' and 5884'
3. Rods: None
4. Pump: None
5. Gas Valves: None

EAST POPLAR UNIT WELL NO. 101

WELL LOG DATA

TYPE OF LOG

INTERVAL LOGGED

Schlumberger Electrical Survey 2"	- - - - -	1090' - 6256'
Schlumberger Electrical Survey 5"	- - - - -	2000' - 6256'
Schlumberger Microlog 5"	- - - - -	2000' - 6256'
Lane Wells Gamma Ray-Neutron 2"	- - - - -	3000' - 6217.5'
Lane Wells Gamma Ray-Neutron 5"	- - - - -	3000' - 6217.5'

SCHLUMBERGER TOPS

	<u>Depth</u>	<u>Datum</u>	<u>Thickness</u>
Eagle	1204	+ 977	
Niobrara	2068	+ 113	
Greenhorn	2412	- 231	
Graneros	2598	- 417	
Muddy Sandstone	2973	- 792	
Dakota Silt	3172	- 991	
Swift	3620	-1439	
Vanguard	3954	-1773	
Rierdon	4133	-1952	
Piper Shale	4310	-2129	
Piper Limestone	4388	-2207	
Gypsum Springs	4441	-2260	
Spearfish	4648	-2467	
Amsden	4730	-2549	
Heath	4890	-2709	
Otter	5060	-2879 ?	
Kibbey Sandstone	5200	-3019	
Kibbey Limestone	5350	-3169	
Madison	5446	-3265	
A-1	5548	-3367	5'
A-2	5558	-3377	3'
A-3	5570	-3389	10'
A-4	5580	-3399	14'
B-1	5683	-3502	7'
B-2	5701	-3520	14'
B-3	5722	-3541	5'
B-4	5751	-3570	4'
B-5	5784	-3603	?
C-1	5825	-3644	?
C-2	?	?	?
C-3	5846	-3665	14'
C-4	*5870	-3689	6'
C-5	5888	-3707	8'
Fast	*6089	-3607	

EAST POPLAR UNIT WELL NO. 101

DRILL STEM TESTS

- DST #1: 4958'-4968', Heath Sandstone. Ran DST #1 with Halliburton on Heath Sandstone from 4958'-4968', no water cushion, 5/8" bottom choke. Tool opened with strong blow, remained same throughout test. Tool open 2 hours, shut in 20 minutes. Recovered gas to surface in 2 hours. Recovered 2310' clean oil, 120' oil and gas cut mud, no water. IBHFP = 61#, FBHFP = 800#, BHSIP = 2400#, and Hydro = 2648#.
- DST #2: 5208'-5229', Kibbey Sandstone. Ran DST #2 with Halliburton, 5/8" bottom choke, no water cushion. Tool open 2 hours, closed 30 minutes. Tool opened with weak blow, increased to medium blow in 10 minutes, remained same for 1 hour, then died. Recovered 90' gas, 180' oil-and-gas-cut mud, and 270' salt water with show of oil in water.
- DST #3: 5824'-5832', "C-1" and "C-2" Zones. Ran DST #3 with Howco tester, single packer, no water cushion, 5/8" bottom choke. Tool opened with weak blow, increased to medium blow in 10 minutes, and remained same throughout test. Tool open 2 hours, shut in 30 minutes. Recovered 570' gas, 120' clean oil, and 30' mud-cut oil, no free water. IBHFP--30#, FBHFP--62#, BHSIP--1425# (still building--clock appeared to have stopped momentarily), Hydro--3260#.
- DST #4: 5838'-5865', "C-3" Zone. Ran DST #4 with Howco tester, single packer, 5/8" bottom choke, no water cushion. Tool opened with weak blow, increased to medium blow in 5 minutes and remained same throughout test. Tool open 2 hours, shut in 30 minutes. Recovered 630' gas, 60' clean oil, 300' mud-cut oil, 210' oil-and-gas-cut mud, and 120' salty sulphur water. IBHFP--90#, FBHFP--346#, BHSIP--2980#, Hydro--3203#.
- DST #5: 6103'-6135', Fast Zone. Ran DST #5 with Howco single packer, 5/8" bottom choke, no water cushion. Tool open 2 hours, shut in 30 minutes. Tool opened with weak blow, remained same throughout test. Recovered 90' watery mud. IBHFP--15#, FBHFP--30#, BHSIP--118#, Hydro--3368#.
- DST #6: 6118'-6135', Fast Zone. Ran DST #6 with Halliburton single packer rathole test, no water cushion, 5/8" bottom choke. Tool opened with weak blow, remained same throughout test. Tool open 2 hours, shut in 30 minutes. Recovered 60' mud. IBHFP--15#, FBHFP--15#, BHSIP--30#, Hydro--3310#.
- DST #7: 6131'-6156', Fast Zone. Ran DST #7 with Howco tester, 5/8" bottom choke, no water cushion. Tool opened with weak blow for 20 minutes. Blow stopped--remained dead for rest of test. Tool open 2 hours, shut in 30 minutes. Recovered 30' watery mud. IBHFP--15#, FBHFP--15#, BHSIP--30#, Hydro--3200#.

EAST POPLAR UNIT WELL NO. 101

MUD PROGRAM SUMMARY

MUD SERVICE COMPANY:

Northern Mud Company

MUD ADDITIVES AND COST:

Material	Surface-Hole		Surface - 5900'		5900' - T.D.		Total	
	Amt.	Cost	Amt.	Cost	Amt.	Cost	Amt.	Cost
Caustic	2	28.00	3	42.00			5	70.00
Q-Broxin	3	37.50	15	187.50			18	225.00
Magcobar	20	61.22	125	382.62	1110	3396.61	1255	3,840.45
Salt gel	6	17.07	14	39.91	200	569.04	220	626.02
Ky-Lo-Gel			204	1632.00	83	664.00	287	2,296.00
Preservative			10	500.00	5	250.00	15	750.00
Magcophos			4	110.00			4	110.00
Hulls			22	110.00	80	400.00	102	510.00
Palcaseal			19	76.00	17	68.00	36	144.00
Gypsum			12	26.40	8	17.60	20	44.00
Cello Seal					15	123.75	15	123.75
Mud Fibre					17	68.00	17	68.00
Magco Fibre					29	116.00	29	116.00
Mica					11	44.00	11	44.00
Tuff Plug					4	44.00	4	44.00
Magcogel					31	71.38	31	71.38
Total		143.79		3106.43		5832.38		\$ 9,082.60
Trucking		103.32		139.96		531.02		774.30
Tax		3.10		4.20		15.92		23.22
Total		250.21		3250.59		6379.32		\$ 9,880.12
Salt Water		160.00						160.00
Crude Oil				375.00		138.00		513.00
Grand Total		\$410.21		\$3625.59		\$6517.32		\$10,553.12

UNIT MUD COSTS:

	Total Cost	Feet Drld.	Cost per Foot	Days Used	Cost per Day
Spud - T.D.	\$10,553.12	6248	\$ 1.69	37	\$ 285.21
Spud - Surface	410.21	1100	.37	2	205.11
Surface - 5900'	3,625.59	4800	.76	20	181.28
5900' - T.D.	6,517.32	348	18.73	15	434.49

MUD PROPERTIES:

Depth	Weight	Viscosity	Water Loss	Salt Content PPM	Remarks
1100	11.0	55	—	—	Surface hole
4292	9.8	46	18.4	N11	Conversion
4759	10.3	52	12.4	3,300	Reduce W.L.-Add oil
4969	10.0	59	8.8	4,000	Drilling

Mud Program Summary Continued (Mud Properties)

Depth	Weight	Viscosity	Water	Salt Content	Remarks
			Loss	PPM	
5180	10.3	59	11.0	1,650	Circulating to core
5228	10.3	65	7.4	∞	Coring
5532	10.4	55	12.4	4,800	Conditioning mud
5780	10.4	58	10.4	6,600	Drilling
5865	10.4	52	6.4	∞	Circulating to core
5928	10.3	50	15.0	∞	Lost returns
6014	10.4	65	6.6	∞	Drilling
6192	10.4	70	8.8	∞	Coring
6248	10.3	60	8.2	∞	T.D.

MUD SUMMARY:

A 12-1/4" hole was drilled to 1100 feet with salt water with additions of salt gel, barites, caustic soda, and Q-Broxin. Only minor amounts of all materials were added since the native logs formed sufficient viscosity, the weight of the salt water provided enough hydrostatic head to control the Judith River sand, and 3 sacks of Q-Broxin mixed with 200 lb. of caustic soda provided adequate chemical treatment. Returns were lost at approximately 900 feet presumably in the gravels found from 100 feet to 250 feet, but after mixing a new pit of mud, drilling continued without difficulty. The 9-5/8" surface casing was cemented at 1088 feet.

An 8-3/4" hole was drilled below the surface casing to 4250 feet with water where conversion to a gyp-base mud was made with additions of gyp, starch, and preservative. From 4250 feet to 4800 feet the following mud properties were maintained: Weight - 10.2 to 10.4 lb. per gallon, Viscosity - 40 to 50 sec. per quart, and Water Loss - 15 cc. Additions of lease crude oil were started at 4800 feet to aid in controlling the weight and water loss. From 4800 feet to 5900 feet mud properties were: Weight - 10.3 to 10.4 lb. per gallon, Viscosity - 55 to 65 sec. per quart, and Water Loss - less than 10cc. The depth of 5900 feet would be considered normal Total Depth for a "C" Zone well. Below 5900 feet the well was a semi-wildcat. Seven cores were cut and four drill stem tests were run before reaching 5900 feet. Mud costs were slightly higher than on comparable field wells as a result of the more extensive coring and testing.

At 5928 feet a severe lost circulation zone was encountered. Conventional lost circulation materials (hulls, fibres, etc.) were unsuccessfully tried. Then two cement plugs were tried and these too failed to regain returns. A diesel oil-bentonite squeeze was then performed which was successful in gaining returns. No further mud problems resulted. Eight cores were cut and three drill stem tests were run in the interval from 5900 feet to the total depth of 6248 feet 6255 feet Schlumberger. Logs were run and 5-1/2" production casing was cemented at 6254 feet. Mud costs for drilling below 5900 feet were excessive due to the lost circulation problem. However, when the severity of the lost circulation zone is considered, the mud used can be considered nearly a minimum.

EAST POPLAR UNIT WELL NO. 101

DRILLING BIT RECORDS

Bit No.	Make	Size	Type	Ser. No.	From	To	Hours
	C.P.	12-1/4"	ES3	Reran	0	1100	60
1	Hughes	8-3/4"	OSC3	37720	1100	2900	18
2	Hughes	"	OSC-J	29376	2900	3192	11-1/2
3	Hughes	"	OSC	7517	3192	3343	6-1/2
4	Hughes	"	OSC-J	92451	3343	3494	6
5	Hughes	"	OSC-J	61738	3494	3650	7
6	Hughes	"	OSC-J	29375	3650	3963	16
7	Hughes	"	OSC	9238	3963	4247	19-1/2
8	Hughes	"	OSC	7466	4247	4416	20
9	Hughes	"	OSC	65682	4416	4640	20
10	Hughes	"	OSC	65809	4640	4905	27-1/2
11	Hughes	"	OWV	79013	4905	4969	6
12	Hughes	"	OWV	81084	4969	5048	10
13	Hughes	"	OWV	79012	5048	5150	14
14	Hughes	"	OWV	80163	5150	5180	3
15	Hughes	"	OWV	81081	5180	5280	12
16	Hughes	"	OWV	81082	5280	5361	14
17	Hughes	"	OWV	79368	5361	5488	21
18	Hughes	"	OWV	79443	5488	5650	20-1/2
19	Hughes	"	OWV	65656	5650	5743	10
20	Hughes	"	OWV	79011	5743	5810	9
21	Hughes	"	OWV	50932	5810	5865	4
22	Hughes	"	OWV	66362	5865	5928	10
23	Hughes	"	OWV	79350	5928	5932	2
24	Hughes	"	OWV	48099	5932	5999	9
25	Hughes	"	OWV	69378	5999	6054	10-1/2
26	Hughes	"	OWV	81169	6054	6100	10-1/2
27	Hughes	"	OWC	78296	6100	6157	9
28	Hughes	"	OWC	73400	6157	6194	6
29	Hughes	"	OWC	86195	6194	6248	15

TOTCO RECORD

Totco
Footage

800
1100
1417
2953
3185
3490
3680
3950
4450
4640
4905
5130
5270
5361
6058

Degrees

1/2
1/2
3/4
2
2
3/4
3/4
3/4
1-3/4
1-3/4
2
1-1/2
2
1-1/2
1

EAST POPLAR UNIT WELL NO. 101DIAMOND CORE BIT RECORD

Core No.	From	To	Footage	Hours	Size	Make	No.	Type	Ser. No.
1	4969	4979	10	1/2	6-1/8	Drilling	Ser.	B-12-B	C-16623
2	5176	5215	39	6	"	"	"	"	"
3	5215	5229	14	2-1/2	"	"	"	"	"
4	5743	5763	20	3-1/2	"	"	"	"	"
5	5810	5832	22	7-1/2	"	"	"	"	"
6	5832	5865	33	7-1/2	"	"	"	"	"
7	5865	5880	15	3-1/2	"	"	"	"	"
8	6100	6115	15	6-1/2	"	"	"	"	"
9	6115	6135	20	11	"	"	"	"	"
10	6135	6155	20	9-1/2	"	Christensen	"	"	N-125
11	6155	6156	1	1/4	"	"	"	"	"
12	6157	6177	20	5	"	"	"	"	S-4389
13	6177	6192	15	7-3/4	"	"	"	"	"

EAST POPLAR UNIT WELL NO. 101

FUTURE PRODUCTION ZONES

"A-1", "A-2", "A-3" and "A-4"; "B-1", "B-2", "B-3" and "B-4"; "C-1" and "C-3"
Zones because of structural position and results obtained from the Drill
Stem Tests.

EAST POPLAR UNIT WELL NO. 101

SAMPLE DESCRIPTIONS

- 2000-2200 Shale: dark gray to black with gray, sandy shale, also traces of light gray limestone.
- 2200-2280 Shale: dark gray with some fine grained sandstone, some brown shale.
- 2280-2320 Shale: as above with some white, chalky limestone.
- 2320-2380 Shale: gray, limy with some white, fine grained sandstone, some white bedded limestone.
- 2380-2420 Shale: as above, no sandstone.
- 2410 Sample Top Greenhorn
- 2420-2480 Shale: dark gray, traces of brown, white and buff limestone, some light gray sandstone top 20 feet.
- 2480-2600 Shale: dark gray, scattered traces of white bedded limestone.
- 2600-2760 Shale: gray with scattered traces of brown, sandy shale.
- 2760-2980 Shale: dark gray to black with stringers of white, fine grained sandstone.
- 2975 Sample Top Muddy Sandstone
- 2980-3020 Sandstone: medium grained, salt and pepper (appearance) along with black, marine shale.
- 3020-3100 Shale: black, splintery.
- 3100-3180 Shale: dark gray with traces of buff to brown limestone.
- 3175 Sample Top Dakota Siltstone
- 3180-3280 Siltstone: dark gray, limy with above black shale, (10 feet samples 3280-3460).
- 3280-3460 Sandstone: medium grained, gray, fair permeability and porosity, no show, stringers of black, splintery shale.
- 3460-3510 Shale: black, marine, slightly calcareous.
- 3510-3540 Sandstone: white, medium grained, fair permeability and porosity, no show, slightly calcareous shale as above.
- 3540-3620 Shale: black, traces of pyrite and above sandstone.
- 3620 Sample Top Swift
- 3620-3640 Sandstone: white, medium to fine grained glauconite, black shale as above.

Sample Descriptions Continued

- 3640-3700 Shale: black, marine, traces of above sandstone.
- 3700-3740 Sandstone: white, medium to coarse grained glauconite with some white, chalky limestone.
- 3740-3960 Shale: black, splintery with traces of white, crystalline limestone, traces of gray-brown, silty limestone.
- 3955 Sample Top Vanguard
- 3960-4020 Sandstone: fine grained, gray, very slightly glauconitic with dark gray shale.
- 4020-4130 Shale: dark gray to black with traces of above sandstone.
- 4130 Sample Top Rierdon
- 4130-4160 Sandstone: fine grained, dark gray with traces of gray, silty shale, also traces of buff limestone.
- 4160-4270 Shale: black, splintery, very calcareous.
- 4270-4310 Shale: light gray with stringers of buff, dense limestone.
- 4310 Sample Top Piper Shale
- 4310-4390 Shale: light gray with traces of red, sandy shale, some limestone top 20 feet.
- 4390 Sample Top Piper Limestone
- 4390-4450 Limestone: dark gray-brown, dense with traces of permeability and porosity, black splintery shale from 4410-20, sample slightly sandy, no show.
- 4450-4470 Shale: black, splintery.
- 4470-4490 Sandstone: white, very fine grained, hard, tight, black shale as above.
- 4490-4530 Shale: black, marine with traces of white anhydrite.
- 4530-4560 Siltstone: light gray, sandy with black shale as above.
- 4560-4580 Shale: multi-colored, red, grays and green, some gray, dense limestone.
- 4580-4590 Shale: red, anhydritic also black, marine.
- 4590-4610 Limestone: dark to light gray, dense, white, chalky limestone.
- 4610-4630 Shale: red, anhydritic.
- 4630-4650 Shale: black, soft, white anhydrite.
- 4650 Sample Top Spearfish

Sample Descriptions Continued

- 4650-4660 Sandstone: red, fine grained, hard, tight, no show, black shale.
- 4660-4690 Shale: red and black, red shale, silty.
- 4690-4720 Sandstone: fine grained, poor to no permeability and porosity, no show, black and red shale.
- 4720-4730 Shale: black, splintery with traces of above sandstone.
- 4730 Sample Top Amsdem
- 4730-4750 Dolomite: pink, very shaley (poor acid reaction) traces of above sandstone and shale, limestone has poor to no permeability and porosity, no fluorescence or cut.
- 4750-4760 Shale: dark gray to black, splintery, traces of above dolomite.
- 4760-4780 Dolomite: pink, argillaceous for most part, traces of permeability and porosity, no show, also some pink limestone.
- 4780-4790 Shale: multi-colored, black, purple, green.
- 4790-4800 Limestone: dark gray, dense, no permeability and porosity, no show.
- 4800-4820 Dolomite: gray, dense with above limestone.
- 4820-4850 Limestone: gray, chalky, trace of permeability and porosity, no fluorescence or cut, also black, marine shale.
- 4850-4870 Shale: multi-colored with trace of above limestone.
- 4870-4880 Shale: brown, anhydritic, some soft, white anhydrite.
- 4880-4890 Shale: black and red.
- 4890 Sample Top Heath
- 4890-4900 Shale: multi-colored, blacks, reds and purples.
- 4900-4910 Shale: black, slightly silty.

C.O. drill break at 4919

- 15 min. Sample: Shale - black and red, traces of dense, buff limestone.
- 30 min. Sample: as above, trace of hard, white, fine grained sandstone.
- 45 min. Sample: Sandstone - white, hard, tight, fine grained to medium grained, no show.

1 hour Sample: as above.

- 4920-4930 Shale: black, red with trace of above sandstone.
- 4930-4940 Sandstone: red, medium grained, fair permeability and porosity, no show.

Sample Descriptions Continued

4940-4950 Shale: red, silty.

4950-4960 Sandstone: red, hard, fine grained, poor permeability and porosity, no show.

C.O. Samples at 4968'

15 min. Sample: Sandstone - red, medium grained, fair to poor permeability and porosity, scattered fluorescence, slow streams, cut sample from (4956)

30 min. Sample: Sandstone - red and white, medium grained, fairly even fluorescence, good cut.

45 min Sample: Sandstone - white, medium to coarse grained, sub angular, fair stain, even fluorescence, good, instant stream cut.

1 hour Sample: Sandstone: as above.

1 hr. 15 min. Sample: Sandstone - as above.

Drilled 1' (4968'-4969')

4969-4979 Core No. 1 (Heath Sandstone)

4969-4980 Sandstone: purple, medium grained, good permeability and porosity, widely scattered fluorescence, poor cut.

4980-4990 Sandstone: white, quartzitic, no permeability and porosity, no show.

4990-5000 Sandstone: as above with white quartzitic sandstone, no show.

5000-5030 Shale: multi-colored with reds and black.

5030-5060 Sandstone: white, medium to fine grained, hard, tight, no show.

5060 Sample Top Otter

5060-5090 Shale: multi-colored reds, black and greens.

5090-5140 Shale: as above but with coarse grained, loosely cemented quartz grained, apparently sandstone and shale stringers, sandstone has good permeability and porosity, no fluorescence, but stain and will cut, scattered buff limestone.

5140-5160 Shale: multi-colored reds and black.

5160-5176 Shale: red, traces of soft, white limestone.

5176-5215 Core No. 2 (above Kibbey Sandstone)

5215-5229 Core No. 3 (Kibbey Sandstone Porosity)

Sample Descriptions Continued

- 5229-5250 Sandstone: red and white, hard, dense, trace of the sandstone in Core No. 3.
- 5250-5270 Sandstone: red, medium grained to fair grained, scattered, spotted fluorescence, poor, milky cut.
- 5270-5280 Shale: dark gray with traces of above sandstone.
- 5280-5320 Sandstone: red, medium to coarse grained, good permeability and porosity, no show.
- 5320-5350 Sandstone: red, fine grained, hard, tight, no show.
- 5352 Sample Top Kibbey Limestone
- 5350-5360 Limestone: dark gray to buff, fairly dense, poor permeability and porosity, no show, trace of green, limey shale.
- 5360-5440 Shale: red, silty, with stringers of above limestone and hard, dense anhydrite.
- 5445 Sample Top Madison
- 5440-5460 Anhydrite: gray, hard, dense and soft, white.
- 5460-5470 Shale: multi-colored, trace of gray, fine grained sandstone grains.
- 5470-5490 Shale: gray, very anhydritic.
- 5490-5520 Anhydrite: dark gray, dense with stringers of gray, dense limestone.
- 5520-5540 Limestone: gray, dense, hard, tight, no show.
- 5548 Sample Top A-1
- 5540-5560 Limestone: dark gray to black, fair permeability and porosity, fairly even fluorescence, good cut.
- 5560-5590 Limestone: gray, finely crystalline, good permeability and porosity, even fluorescence, good cut, traces of oolites, stringers of anhydrite last 10'.
- 5590-5610 Shale: red, silty with above anhydrite.
- 5610-5620 Anhydrite: dark gray, dense.
- 5620-5630 Limestone: dark gray, dense with above anhydrite.
- 5630-5650 Shale: red, silty, traces of soft, white anhydrite.
- 5650-5670 Shale: dark gray with traces of above reds.
- 5670-5680 Anhydrite: dark gray, dense.

Sample Descriptions Continued

5683 Sample Top B-1

5680-5690 Limestone: dark gray-brown, finely crystalline, fair permeability and porosity, fair fluorescence and cut.

5690-5700 Anhydrite: dark gray, dense.

5701 Sample Top B-2

5700-5720 Limestone: dark gray-brown, finely crystalline, fair permeability and porosity, spotted stain, good cut.

5722 Sample Top B-3

5720-5730 Dolomite: dark gray, earthy, with stringers of dense, gray limestone and anhydrite.

5730-5743 Anhydrite: gray to white, dense.

5743-5763 Core No. 4 (B-4 Zone)

5763-5780 Limestone: dark gray, dense, scattered anhydrite and black shale.

5780-5810 Mud system loaded with lost circulation shaker by-pass.

5810-5832 Core No. 5 (C-1 & C-2 Zones)

5832-5865 Core No. 6 (C-3)

5865-5880 Core No. 7 (below C-3 Zone)

5880-5900 Lost circulation materials

5900-5920 Limestone: dark gray with some gray inter-crystalline, trace of permeability and porosity, spotted fluorescence, poor to no cut. Few pins fluorescence on one side only (fracturing).

5920-5950 Limestone: dark gray to black, medium crystalline with fair permeability and porosity, scattered spotty fluorescence, poor to no cut. Majority of samples cement.

5950-5970 Limestone: dark gray, dense, no show.

5970-5990 Limestone: gray, finely crystalline, trace of permeability and porosity, dense for most part.

5990-6010 Limestone: dark gray to black, micro-crystalline to finely crystalline, fair permeability and porosity, trace of gray, finely crystalline limestone to chalky limestone, could be replaced fossil hash ground up, no show.

6010-6030 Limestone: dark gray, dense with few pieces that have permeability and porosity.

6030-6040 Limestone: black to gray-brown, finely crystalline to dense,

Sample Descriptions Continued

scattered fluorescence and milky cut, also gray, finely crystalline limestone with above scattered cut and fluorescence.

6040-6050 Limestone: gray, finely crystalline, also scattered fluorescence and cut.

6050-6060 Limestone: black, dense, also the above gray, finely crystalline with scattered show.

6060-6090 Limestone: dark gray, finely crystalline, traces of permeability and porosity, widely scattered fluorescence, poor milky cut.

6090-6100 Limestone: dark gray, dense, poor to no permeability and porosity, no show.

6100-6115 Core No. 8 (Fast Zone)

6115-6135 Core No. 9 (Fast Zone)

6135-6155 Core No. 10 (Fast Zone)

6155-6156 Core No. 11 (Fast Zone)

6156-6157 Drilled 1', no sample

6157-6177 Core No. 12 (Fast Zone)

6177-6192 Core No. 13 (Fast Zone)

6192-6193 Core No. 14 (Fast Zone)

6193-6194 Drilled 1', no sample

6194-6203 Core No. 15 (Fast Zone)

6203-6210 Limestone: both dark gray, dense and finely crystalline gray, widely scattered fluorescence, fair cut, traces of permeability and porosity.

6210-6220 Limestone: as above.

6220-6230 Limestone: dark gray, dense, gray, finely crystalline, traces of permeability and porosity, scattered fluorescence, fair cut, trace of red, silty shale.

6230-6240 Limestone: as above.

6240-6248 Limestone: dark gray, dense with finely crystalline, light gray limestone, with trace of permeability and porosity, spotted stain, fair cut.

EAST POPLAR UNIT WELL NO. 101

CORE DESCRIPTIONS

Core No. 1 4969'-4979', Cut 10', Recovered 10', Heath Sandstone.
C.T. 7, 6, 4, 4, 2, 3, 3, 4, 3, 3.

3' Sandstone: purple, medium to coarse grained, almost quartzitic, no permeability and porosity, no show.

7' Sandstone: purple to red, medium grained, red argillaceous, stringers entire unit. Excellent permeability and porosity, widely scattered fluorescence, fair cut entire unit wet. Reverse bedding top foot of unit (on lap, off lap).

Core No. 2 5176'-5215', Cut 39', Recovered 38', Above Kibbey Sandstone.
C.T. 9, 9, 7, 9, 9, 10, 10, 9, 12, 11, 11, 10, 9,
9, 8, 7, 6, 8, 9, 9, 9, 10, 9, 7, 7, 7, 8, 7,
8, 8, 9, 8, 9, 8, 9, 8, 9, 9, 8,

5' Shale: dark gray to black with widely scattered gray anhydrite included.

1' Anhydrite: dark gray, dense.

13' Shale: dark gray, poker chip.

6' Shale: purple, silty.

14' Shale: dark red-brown, silty.

Core No. 3 5215'-5229', Cut 14', Recovered 14', Kibbey Sand. Porosity.
C.T. 7, 8, 11, 14, 9, 8, 8, 6, 5, 4, 4, 5, 6, 9, jammed.

6' Shale: gray, silty, stringers of siltstone.

6' Sandstone: red, fine grained, clean top foot, hard and tight, bottom 5' of unit highly fractured, has fair permeability and porosity, fluorescence in matrix and on fracture planes, good oil odor on fresh break.

2' Shale: red, silty, fracture show on fracture planes.

Core No. 4 5743'-5763', Cut 20', Recovered 20', "B-4" Zone.
C.T. 9, 10, 13, 12, 6, 10, 10, 11, 9, 10,
12, 10, 10, 9, 9, 10, 12, 14, 11, 13,

4' Limestone: dark gray to black, micro-crystalline to dense, no show.

B-4 6' Dolomite: gray, earthy, poor permeability and porosity, very slight odor on fresh break, no fluorescence or cut. Bottom 2' of unit has gray anhydrite stringers.

10' Anhydrite: dark gray, dense, stringers of dark gray to black shale and limestone stringers.

Core Descriptions Continued

Core No. 5

5810'-5832', Cut 22', Recovered 22', "C-1" Zone.
C.T. 11, 14, 14, 15, 16, 18, 17, 17, 15, 14,
19, 17, 17, 15, 17, 18, 22, 25, 22, 26,
31, 30,

3' Limestone: dark gray, dense, no permeability and porosity, no show.

3' Limestone: dark gray, dense, open vertical fracture, slight bleeding of oil on fracture plane, no matrix show.

8' Limestone: dark gray, dense, no permeability and porosity, no show.

C-1

4' Limestone: gray, dense, interbedded with finely crystalline that has trace of permeability and porosity, sulfur and oil odor, widely scattered fluorescence, poor milky cut.

C-2

4' Limestone: dark gray, micro-crystalline to dense, sulfur odor, no visible fluorescence or cut in matrix. Unit open vertical fracturing, widely scattered fluorescence, no cut.

Core No. 6

5832'-5865', Cut 33', Recovered 34', C-3 Zone.
C.T. 19, 11, 11, 10, 14, 18, 13, 12, 11, 8,
9, 10, 9, 9, 8, 7, 8, 14, 16, 26, 14,
15, 15, 12, 13, 13, 11, 10, 13, 13, 14,
14, 14,

1' Limestone: dark gray, dense, vertical fracture, oil bleeding on fracture planes, no matrix show. Fractures lead to porosity below.

2' Limestone: dark gray-brown, finely crystalline, fair permeability and porosity, fair fluorescence and cut, open vertical fracture.

4' Limestone: gray, dense, below fracturing that has been well recemented.

C-3

10' Limestone: brown, finely crystalline, earthy, fair fluorescence and cut top 7', bottom 3' appears wet.

17' Limestone: dark gray, dense, few vertical fractures that have been well recemented, no permeability and porosity, no show.

Core No. 7

5865'-5880', Cut 15', Recovered 15', Below "C-3" Zone.
C.T. 10, 14, 12, 12, 12, 12, 12, 12, 14, 15,
14, 12, 12, 12, 12,

3' Limestone: dark gray, dense, bottom 2' open vertical fractures, no fluorescence or cut on fracture plane or matrix.

3' Limestone: coral beds, matrix tight, micro-crystalline, trace of permeability and porosity, no show.

Core Descriptions Continued

9^o Limestone: dark gray, dense, no show.

Core No. 8

6100'-6115', Cut 15', Recovered 15', Fast Zone
C.T. 16, 17, 19, 20, 16, 17, 16, 18, 18, 12,
16, 23, 25, 24, 21,

3^o Limestone: dark gray, dense, poor to no permeability and porosity, no show.

12^o Limestone: dark gray-brown, coarsely to medium crystalline, fair porosity, questionable permeability. Open vertical fracture throughout unit. Bright, bluish-golden fluorescence on fracture planes. Oil and gas odor on fresh break, scattered matrix show.

Core No. 9

6115'-6135', Cut 20', Recovered 20', Fast Zone.
C.T. 14, 20, 24, 28, 26, 26, 25, 28, 29, 28,
28, 29, 25, 28, 26, 25, 24, 21, 28, 28,

4^o Limestone: dark gray-brown, finely crystalline, no show.

12^o Limestone: gray, dense, widely scattered, vertical fractures top 8'; spotted, pale fluorescence on fracture planes only.

4^o Limestone: coarsely crystalline, gray-brown, good porosity, questionable permeability, unit bleeding light, brown oil, highly fossiliferous.

Core No. 10

6135'-6155', Cut 20', Recovered 12', Fast Zone.
C.T. 29, 29, 33, 33, 28, 25, 21, 21, 33, 27,
22, 24, 27, 23, 21, 21, 30, 39, 31, 40,

2^o Limestone: gray-brown, coarsely crystalline, fair porosity, questionable permeability, bleeding dark brown to black oil, very fossiliferous, good matrix, fluorescence and cut.

2^o Limestone: dark gray, slightly argillaceous, also scattered pin points of dark brown oil.

4^o Limestone: dark gray-brown, coarsely crystalline, fair porosity, poor permeability, bleeding dark brown to black oil, good matrix show.

1^o Limestone: dark gray, argillaceous, tight, no show.

3^o Limestone: dark gray-brown, coarsely crystalline, fair porosity, poor to no permeability, good matrix show.

Core No. 11

6155'-6156', Cut 1', Recovered 3', Fast Zone.

1^o Limestone: gray, dense, scattered matrix show, poor porosity and permeability.

1^o Limestone: coarsely crystalline, gray-brown, bleeding black to brown oil, fair permeability and porosity.

Core Descriptions Continued

- 1⁰ Limestone: gray, dense, fractured, scattered fluorescence on planes only.

Core No. 12

6157⁰-6177¹, Cut 20¹, Recovered 20¹, Fast Zone
C.T. 22, 15, 16, 11, 16, 15, 11, 14, 13, 12,
13, 10, 12, 11, 13, 13, 13, 15, 14, 17,

- 4⁰ Limestone: gray, dense, poor to no permeability and porosity, no show.
4¹ Limestone: dark gray to black, dense, no permeability and porosity, no show.
5⁰ Limestone: dark gray-brown, fossiliferous, hard, tight, no show.
7⁰ Limestone: dark gray-brown, fair permeability and porosity, fossiliferous water; wet.

Core No. 13

6177⁰-6192¹, Cut 15¹, Recovered 15¹, Fast Zone.
C.T. 15, 19, 25, 32, 28, 29, 29, 21, 18, 20,
22, 27, 18, 20, 35,

- 11⁰ Limestone: dark gray, dense, no permeability and porosity, no show.
1¹ Limestone: dark gray to black, slightly dolomitic.
1⁰ Limestone: gray, highly fossiliferous, fair permeability and porosity, water but no show.
2⁰ Limestone: dark gray, dense, bottom 6⁰ open vertical fractures.

Core No. 14

6192⁰-6193¹, Cut and Recovered 1¹, Fast Zone.
C.T. 30 minutes plus

- 1⁰ Limestone: dark gray, dense, no permeability and porosity, no show.

Core No. 15

6194⁰-6203⁰, Cut 9¹, Recovered 8¹, Fast Zone.
C.T. 32, 36, 39, 37, 40, 45, 45, 50, 38,

- 8⁰ Limestone: dark gray, dense, no permeability and porosity, no show.

EAST POPLAR UNIT WELL NO. 101

CORE ANALYSIS REPORTS

Sample No.	Representative of Feet	Midpoint of Sample	Footage	Permeability		Effective Porosity Percent	Density		Saturation % of Pore Space		
				Radial	Vertical		Bulk	Matrix	Resid. oil	Water	
<u>Core No. 1 4969'-4979' Heath Sandstone</u>											
1	4970-71			0.03	0.11	1.2	2.70	2.73	Trace	95.7	
2	4971-72			0.02	0.10	0.4	2.73	2.74	Trace	94.9	
3	4972-73			U.T.	0.85	18.6	2.48	3.04	0	64.0	
4	4973-74			4.27	1.22	9.4	2.45	2.71	2.5	49.8	
5	4974-75			63.	16.	10.6	2.35	2.63	6.6	37.8	
6	4975-76			4.10	1.85	6.6	2.49	2.67	Trace	85.1	
7	4976-77			5.41	1.20	5.0	2.52	2.65	Trace	58.5	
8	4977-78			1.97	1.08	4.9	2.59	2.73	20.4	75.5	
9	4978-79			60.	0.16	20.4	2.27	2.85	Trace	25.8	
<u>Core No. 4 5743'-5763' "B-4" Zone</u>											
16	5747-48			0.23	0.17	0.4	2.61	2.62	1.2	95.0	
17	5748-49			0.18	0.04	0.1	2.66	2.67	8.1	87.2	
18	5749-50			F.T.	U.T.	0.4	2.67	2.68	2.1	94.2	
19	5750-51			0.16	0.02	0.2	2.68	2.68	Trace	95.8	
20	5751-52			0.08	0.05	0.2	2.73	2.73	0	94.9	
21	5752-53			0.01	0.01	0.3	2.73	2.76	4.9	90.5	
<u>Core No. 5 5824'-5832' "C-1" and "C-2" Zone</u>											
22	5824-25			F.T.	1.04	0.2	2.69	2.69	0	95.2	
23	5825-26			F.T.	U.T.	0.2	2.69	2.70	17.6	78.1	
24	5826-27			0.29	0.06	1.9	2.79	2.84	0	5.8	
25	5827-28			3.18	0.20	3.3	2.62	2.71	4.2	87.0	
26	5828-29			0.19	0.77	0.4	2.66	2.67	1.1	95.1	
27	5829-30			0.26	U.T.	0.4	2.67	2.68	6.9	88.1	
28	5830-31			0.12	0.45	0.3	2.70	2.70	0	96.1	
29	5831-32			10.	0.41	0.7	2.65	2.67	0	63.5	
<u>Core No. 6 5832'-5850' "C-2" and "C-3" Zone</u>											
30	5832-33			0.01	U.T.	2.4	2.59	2.66	0.6	96.3	

Core Analysis Report Continued

Sample No.	Representative of Feet	Midpoint of Sample	Footage	Permeability		Effective Porosity Percent	Density		Saturation % of Pore Space	
				Radial	Vertical		Bulk	Matrix	Resid. oil	Water
31	5833-34			0.01	U.T.	4.0	2.56	2.67	0.4	96.4
32	5834-35			U.T.	U.T.	0.4	2.64	2.65	Trace	96.6
33	5840-41			0.11	U.T.	8.7	2.48	2.71	41.1	55.0
34	5841-42			0.08	0.77	9.1	2.40	2.64	49.2	47.0
35	5842-43			0.06	0.67	7.1	2.46	2.65	49.6	46.5
36	5843-44			0.08	1.48	9.0	2.41	2.64	34.8	61.3
37	5844-45			1.14	5.51	14.8	2.29	2.69	32.0	26.8
38	5845-46			0.70	2.54	10.8	2.36	2.65	47.8	35.5
39	5846-47			0.09	2.37	9.3	2.41	2.66	42.4	51.0
40	5847-48			0.06	U.T.	1.1	2.63	2.66	37.8	11.4
41	5848-49			0.69	6.04	10.7	2.37	2.65	30.6	10.8
42	5849-50			0.89	0.83	14.5	2.27	2.65	27.3	11.6

Core No. 8 6100'-6115' Fast Zone

43	6104-05			0.43	0.41	2.8	2.58	2.66	9.3	29.4
44	6105-06			0.01	U.T.	0.3	2.66	2.66	40.4	55.5
45	6106-07			0.06	0.01	1.2	2.66	2.69	34.7	52.1
46	6107-08			0.50	F.T.	1.0	2.66	2.68	50.5	45.2
47	6108-09			0.34	1.56	0.2	2.66	2.67	19.7	76.4
48	6109-10			5.82	27.	0.9	2.63	2.65	50.0	45.1
49	6110-11			0.58	1.36	0.2	2.64	2.64	Trace	94.2
50	6111-12			0.23	0.34	0.2	2.64	2.65	33.6	62.3
51	6112-13			0.26	0.01	0.2	2.64	2.64	52.3	47.1
52	6113-14			0.30	U.T.	1.1	2.64	2.67	10.1	57.4
53	6114-15			0.35	0.01	0.2	2.66	2.66	33.6	62.2

Core No. 9 6115'-6135' Fast Zone

54	6131-32			1.26	0.57	2.6	2.61	2.68	4.5	20.2
55	6132-33			0.15	1.93	2.5	2.62	2.68	6.6	23.9
56	6133-34			0.27	2.09	0.4	2.66	2.67	0	83.2
57	6134-35			0.28	1.06	0.2	2.67	2.67	Trace	93.9

Core No. 10 6135'-6155' Fast Zone

58	6135-36			0.67	9.59	1.5	2.63	2.67	Trace	19.1
----	---------	--	--	------	------	-----	------	------	-------	------

Core Analysis Report Continued

Sample No.	Representative of Feet	Midpoint of Sample	Footage	Permeability		Effective Porosity Percent	Density		Saturation % of Pore Space	
				Radial	Vertical		Bulk	Matrix	Resid. oil	Water
59	6136-37			0.29	0.01	3.2	2.59	2.67	6.0	16.3
60	6137-38			0.80	0.04	2.7	2.56	2.63	Trace	28.8
61	6138-39			0.62	0.06	2.9	2.55	2.63	Trace	39.9
62	6139-40			0.25	0.10	2.2	2.61	2.67	Trace	22.3
63	6140-41			0.19	0.08	0.6	2.64	2.66	Trace	94.7
64	6141-42			0.51	U.T.	0.5	2.66	2.67	19.7	76.1
65	6142-43			0.49	U.T.	2.8	2.61	2.68	Trace	9.3
66	6143-44			0.24	0.63	0.6	2.66	2.67	Trace	97.1
67	6144-45			0.28	0.08	1.2	2.63	2.66	Trace	29.5
68	6145-46			0.17	0.08	1.8	2.65	2.69	Trace	17.5
69	6146-47			0.36	0.01	1.6	2.65	2.69	6.4	22.9
70	6153-54			0.25	0.15	3.9	2.55	2.66	Trace	64.1
71	6154-55			0.65	0.11	2.2	2.61	2.66	36.4	22.7
<u>Core No. 11 6155-6156 Fast Zone</u>										
72	6155-56			0.37	0.39	0.3	2.67	2.68	Trace	95.1
<u>Core No. 12 6157-6177 Fast Zone</u>										
73	6173-74			0.25	2.36	2.5	2.60	2.67	8.9	24.0
74	6174-75			0.41	2.31	1.0	2.63	2.66	20.8	72.9
75	6175-76			0.18	1.39	2.1	2.64	2.70	5.2	23.4
76	6176-77			0.18	2.17	0.4	2.66	2.67	15.0	81.9

SERVICE & TESTING

EAST POPLAR UNIT NO. 101

WORKOVER HISTORY NO. 1

Lease and Well Number: East Poplar Unit No. 101

Field: East Poplar Unit County: Roosevelt State: Montana

Well Location: SW NW Section 14, T28N, R51E

STATUS PRIOR TO PRESENT JOB:

Date Completed: December 7, 1957

Producing Zone: C-5 Zone 5891'-5896' Perforations: 5891'-96'

T.D. 6248' PBDT 5898' Cumulative Production: 379,410 BO

5,739,821 BW Latest Test: November 84 99½% water

JUSTIFICATION FOR WORKOVER:

It is proposed to squeeze the C-5 Zone with 75 sacks cement then perforate the C-3 Zone at 5846'-5851', swab test and acidize with 150 gallons 15% acid, if necessary.

SUMMARY OF WORKOVER:

- 7-11-88 Rig up pulling unit mix mud to 10.4#. Pump mud down tbg and casing. Well dead. Take well head apart, put on BOP, work tbg trying to release stinger from Model D PKR, couldn't get stinger loose. Rig up Gearhart, cut tbg off at 5878' (1' of 2-3/8" tbg looking up). P.O.H. with tbg. Run HOWCO EZ Drill SV squeeze retainer on wire line. Set retainer with top of retainer @ 5874'. SDFD.
- 7-12-88 Pick up stinger for retainer and Hydrotest tbg to 6000#. T.I.H. circulate mud out of hole with salt water. Sting into retainer get injection rate 2 BPM @ 500#. Pump 5 bbls fresh water ahead. Mix 75 sks Class G cmt with .8% Halad-9. Pump bull head cmt into formation pump 40 sks cmt ½ BPM 0 psi. Slow rate to 1/8 bbl per min. & pump 30 sks 10 min. pressure dropped to 250# clear tool & overflush 10 bbls sting out of PKR & reverse out. Squeeze #2 mix 75 sacks Class G cmt with .8% Halad-9 disp to spot sting in retainer pump cmt ½ bbl per min with 8 bbls left slow rate to 1/8 bbl per min. Pressure built to 1500# with 1½ bbls left start staging. Stop 20 min. pressure dropped to 500# pump 1/8 bbl., pressure built to 2000# shut down 2 min. pressure held. Sting out of retainer and reverse out 4 sks cmt. Pull 10 stands. SIFD.

7-13-88 P.O.H. with stinger pick Baker Model "R" double grip
PKR. T.I.H. circulate water out of the hole with oil.
Pull 7 stands. Rig up Gearhart perforate with 1-
11/16 E-Jet perf gun C-3 5846'-51'. Rig down Gearhart.

7-14-88 Tag fluid level at 1000' swab hole dry 19 bbls fluid
40% water wait 1/2 hour make run with swab 8/10 bbl
fluid 20% water. Rig up pump truck to pump 50 bbls
oil with 5 gallons 1176 cleaner & 5 gallons 4902
scale & corrosion inhibitor mixed with it down tbg.
27 bbls into formation 1/2 BPM 1650# ISIP 1400#,
15 min shut in 900#, opened to test tank on 8/64
choke flowing 1.66 BPH @ 450#. 19 hr. test 29.52 BOPD
410#.

7-15-88 Produced 29.52 BFPD 2/10% BS&W on 10/64" choke.

7-16-88 Produced 25.52 BFPD 2/10% BS&W on 10/64" choke.

7-17-88 Produced 8.36 BFPD 99% water on 3/4" choke.

7-18-88 Produced 3.75 BFPD 99% water on 3/4" choke.

7-19-88 T.O.H. with tbg & PKR, T.I.H. with anchor, S.N. & tbg.

7-20-88 Run rods & pump setting pumping unit.

7-21-88 Pump 13 hours 60 BFPD 70% water 18 BOPD & 42 BWPD.

7-22-88 Pump 55.08 BFPD 70% water 16.52 BOPD 38.56 BWPD.

7-23-88 Pump 58.29 BFPD 65% water 20.40 BOPD 37.89 BWPD.

7-24-88 Pump 60.77 BFPD 79½% water 12.46 BOPD 48.31 BWPD.

EAST POPLAR UNIT NO. 101

WORKOVER HISTORY NO. 2

Lease and Well Number: East Poplar Unit No. 101
Field: East Poplar Unit County: Roosevelt State: Montana
Well Location: SW NW Section 14, T28N, R51E
STATUS PRIOR TO PRESENT JOB:
Date Completed: December 7, 1957
Producing Zone: C-3 Zone 5846'-51' Perforations: 5846'-51'
T.D. 6248' PBTD Cumulative Production: 1,616 BO
15,347 BW Latest Test: April 4, 1989 84% water

JUSTIFICATION FOR WORKOVER:

EPU No. 101 is currently producing from the C-3 Zone 5846'-51' at 3 BOPD and 61 BWPD which is uneconomical. It is proposed to acidize this zone with 250 gallons 15% HCL Penn 88 acid.

SUMMARY OF WORKOVER:

5-18-89 MIRUPU pump stuck, strip out of hole with rods and tubing.
5-19-89 Pick up Baker Model A-D1 Packer. Hydrotest tubing to 6000#. Run Packer and tubing to 5828'. Shut down waiting for acid.
5-20-89 Rig up HOWCO fill tubing and casing with salt water spot 250 gallons 15% Penn 88 acid to C-3 perforations at 5846'-51'. Set Packer at 5828', pressure casing to 400#. Start pumping acid ½ BPM @ 780# pressure broke back to 350# @ ½BPM. ISIP 260#, 5 min. 250#, 10 min. 250#, 15 min. 250# let set 30 min. Start flowing acid back on 16/64 choke. Flowed acid back in 1 hour 10 minutes. Put well on 10/64 choke. Flowing 240 BFPD 40% oil 96 BOPD and 144 BWPD.
5-21-89 Layed down rods out of derick, to windy to rig down. 3 BOPD 254 BWPD 99%
5-22-89 24 BOPD 372 BWPD 93½%
5-23-89 17 BOPD 290 BWPD 94½%
6-07-89 29 BOPD 553 BWPD 95%

EAST POPLAR UNIT NO. 101

WORKOVER HISTORY NO. 3

LEASE AND WELL NUMBER: East Poplar Unit No. 101

FIELD: East Poplar Unit COUNTY: Roosevelt STATE: Mt.

WELL LOCATION: SW NW Section 14, T28N, R51E

STATUS PRIOR TO PRESENT JOB:

DATE COMPLETED: December 7, 1957 PRODUCING ZONE: C-3 Zone of the

Madison PERFORATION: 5846-5851 T.D.: 6248 PBTD: 5898

CUMULATIVE PRODUCTION: 379,410 BO 5,739,821 BW C-5 22,467 BO 1,838,475

BW C-3 LATEST TEST: 10 BO 1,001 BW 99% W.C.

SUMMARY OF WORKOVER:

- 7-17-97 MIRUPU Mix mud to 10.4#, bleed casing pressure off, 800# casing. Flowing 19 barrels per hour. Kill tubing with 10.4 mud, casing flowed 60 barrels 39.4 gravity oil. Started flowing water, try to release packer, worked 2 hours, pump 10.4# water down casing, pull 50 stands tubing, shut down for night.
- 7-18-97 Finish pulling out of hole with tubing. Rig up Penkota Wire-line, run junk basket and gauge ring to 5870'. Set CIBP at 5840', run 40 arm caliper log to 5830'. Make 2 runs with dump bailer to 5840'. Perforate 4948-4970', 2 SPF, 4" casing gun. Shut down waiting on Hydrotest.
- 9-19-97 Rig up Hydrotestor, test tubing to 7000#, circulate hole clean, set packer at 5188'. Test bridge plug and casing 1000#, held. Pull up and set packer at 4915', packer would not set, come up hole trying to set the packer. Pull out of hole, shut down waiting on packer.
- 7-20-97 Pick up Baker Model R Double Grip packer. Trip in hole, set packer at 4915' with tail pipe at 4976'. Start swabing, swab to seating nipple, well making 4 barrels per hour, trace of oil.

- 7-22-97 Fluid level at surface, trace of oil. Swab to seating nipple, rig up Dowell to acidize. Acidize with 750 gallons 15% Hydrochloric acid, 2 gallons A261 Corrosion Inhibitor, 8# L58 Iron Stabilizer, 15 gallons U42 Chelating Agent, 38 gallons U100 Mutual Solvent and 2 gallons W54 Emulsifying Agent. Pumped acid and followed with 20 barrels flush. Pumped acid 3/10 BPM at 1600# with no break. ISIP 1450#, 5 min SIP 810#, 10 min. SIP 660#, 15 min SIP 560#, bled pressure to tanks. Started swabbing.
- | | | |
|----------|--------------------------|-------------------------------|
| 1st hour | Swab 25 barrels per hour | 100% Water |
| 2nd hour | Swab 25 barrels per hour | 99% Water |
| 3rd hour | Swab 25 barrels per hour | 99% Water |
| 4th hour | Swab 25 barrels per hour | 99% Water |
| 5th hour | pour newrope socket | 11 barrels per hour 99% Water |
| 6th hour | Swab 30 barrels per hour | 99% water |
- 7-23-97 Fluid to surface, swab 8 hours, averaged 25 barrels per hour, 99% water. Fill hole to get injection rate 3/10 BPM at 1500# Pull out of hole with tubing, shut down waiting on squeeze packer.
- 7-24-97 Pick up squeeze packer, trip in hole, set packer at 4728'. Rig up HOWCO, get injection rate. 1/2 BPM at 1100#. Mix 50 sacks cement with additives, pump 10 barrels fresh water. Pump cement with 35 sacks in shut down to stage. Pressure at 2000#.
- | | | |
|---------------|------------------|---------------------|
| Wait 10 mins. | pump 1/2 barrel | 2000# |
| Wait 12 mins. | pump 1/4 barrel | 2100# bled to 1750# |
| Wait 10 mins. | pump 1/4 barrel | 2500# bled to 2000# |
| Wait 20 mins. | pump 1/4 barrel | 2600# bled to 2000# |
| Wait 17 mins. | pump 1/4 barrel | 2800# bled to 2000# |
| Wait 11 mins. | pump 1/4 barrel | 2750# bled to 2200# |
| Wait 17 mins. | pump 1/4 barrel | 2750# bled to 2240# |
| Wait 9 mins. | pump 1/4 barrel | 2750# bled to 2300# |
| Wait 33 mins. | pump 1/10 barrel | 2900# bled to 2020# |
| Wait 37 mins. | pump 1/10 barrel | 2550# bled to 2000# |
- Reverse out 25 barrels, no cement returns, set packer, pressure tubing to 500# Shut down
- 7-25-97 Had trouble getting BOP to open. Pull out of hole, lay down packer, pick up 4-3/4" bit and scraper. Tag cement at 4826', drilling hard cement to 4974'. Circ. hole clean, shut down.
- 7-26-97 Pressure test casing to 1000#, held. Pull out of hole with bit and scraper. Rig up Penkota Wireline. Pick up 4" perforating gun, 22' long, run in hole to 1090'. Gun hung up, wouldn't go. Pull out of hole with gun. Break gun in half, trip in hole, perforate 4959-4970'. Trip out of hole with wireline, pick up 2nd gun, perforate 4948-4959', rig down wireline. Pick up Baker Model R double grip packer, trip in hole, set packer at 4915' with tail pipe at 4976'. Swab to seating nipple, make 1 run every 1/2 hour, 2.85 barrel per hour, trace of oil.

7-27-97 Swabbing 310# Tubing Pressure Fluid at surface

7-28-97 Swabbing 310# Tubing Pressure Fluid at surface Trace of oil

7-29-97 Swabbing Fluid at surface Trace of oil Swab to seating nipple.
Wait 1/2 hour, make run with swab .85 bbls. 95% Water
1st hour 3.42 bbls. 85% water
2nd hour 4.56 bbls. 80% water
3rd hour 3.42 bbls. 80% water
4th hour 3.42 bbls. 80% water
5th hour 3.42 bbls. 80% water
6th hour 3.42 bbls. 80% water
7th hour 3.42 bbls. 80% water
8th hour 3.42 bbls. 80% water
Chlorides 28,000 ppm

7-30-97 Swabbing Fluid Level at surface
1st run 30% oil Swab to seating nipple
1st hour 2.85 bbls. 80% water
2nd hour 3.42 bbls. 80% water
3rd hour 2.85 bbls. 86% water
4th hour 2.85 bbls. 75% water
5th hour 2.85 bbls. 80% water
6th hour 2.85 bbls. 75% water
Shut Down

7-31-97 Waiting on Frac
Swab to seating nipple wait 1 hour
1st run 3.42 bbls. 75% water
2nd hour 2.85 bbls. 66% water
Shut Down

8-1-97 Pick up 2-7/8" tubing and hydro test
Lay down all 2-3/8" tubing

8-2-97 Wait on Frac Equipment
Pick up Model R Double Grip Packer. Trip in hole, Hydrotesting to 7,000#. Shut down wait on HOWCO to frac.

8-7-97 Rig up HOWCO to frac. Pressure test lines to 65,00#. Pump 1200 gallons at 12-1/2 BPM at 4800#, pump 5000 gallon water frac 30 at 16 BPM 4200#. Pump 4009 gallons Boragel at 10.5 BPM at 3030#, pump 800 gallons at 16-1/2 BPM at 4220#, pump 816 gallons water frac 30 at 5311# 11-1/2 BPM. Well packed off, bled well down at rate of 12 barrels per hour. Flowing sand and jel, flowed 19 hours 195 barrels.

8-8-97	Flowing	300# tubing pressure	trace of oil		
	1st hour	4 barrels	95% water	300#	Choke plugged
	2nd hour	9½ barrels	100% water	260#	
	3rd hour	11.14 barrels	99% water	240#	
	4th hour	14 barrels	99% water	225#	19,000 Chlorides
	5th hour	12.54 barrels	98% water	225#	
	6th hour	9.12 barrels	98% water	225#	
	7th hour	9.69 barrels	98% water	220#	
8-9-97	Flowing	2 BOPD	230 BWPD	99% Water	225# Pressure
8-10-97	Flowing	3 BOPD	263 BWPD	99% Water	125# Pressure
8-11-97	Flowing	5 BOPD	204 BWPD	97½% Water	75# Pressure
8-12-97	Flowing	7 BOPD	233 BWPD	97% Water	145# Pressure
8-13-97	Flowing	5 BOPD	178 BWPD	97% Water	160# Pressure
8-14-97	Flowing	8 BOPD	219 BWPD	96½% Water	120# Pressure
8-15-97	Flowing	8 BOPD	214 BWPD	96½% Water	110# Pressure
8-16-97	Flowing	10 BOPD	236 BWPD	96% Water	120# Pressure
8-17-97	Flowing	10 BOPD	229 BWPD	96% Water	120# Pressure
8-19-97	Move in, rig up pulling unit. Kill well with 10# water. Trip out of hole with packer, pick up 5-1/2" anchor and seating nipple, trip in hole, try to set anchor, wouldn't set. Acted like tubing was backing off. Trip out of hole, pick up new 5-1/2" Baker anchor, trip in hole, set anchor with 20,000# strain. Take of BOP, flange wellhead up.				
8-24-97	Flowing	5 BOPD	242 BWPD	98% Water	
	WORKOVER POTENTIAL				

RECAP OF WORKOVER:

Final Perforations:	4949-4970
Final PBTD:	5840'
Geologic Name Of Producing Zone:	Heath Sand
Workover Potential:	5 BOPD 242 BWPD 98% Water

CHEMICAL & GEOLOGICAL LABORATORIES

Casper Glendive Farmington Sterling

FULL DIAMETER CORE STUDY

Operator. Murphy Corporation . . . Field. E. Poplar (Roosevelt) Montana Formation Heath, Kibbey, B-4, C1, C2, C3 &
 Well No. 101 East Poplar Unit . . . Location C NW 14-28N-51E . . . Depths. Mission Canyon
 Elevation. 2181 KB . . . Date. December 6, 1957 . . . Lab. No. 884

Sample No.	Representative of Feet	Footage	Permeability		Effective Porosity %	Density		Saturation % of Pore Space		Description
			Radial	Vertical		Bulk	Matrix	Residual Oil	Water	
<u>Heath</u>										
	<u>Core No. 1</u>	4669-4979	Rec. 10'							
1	4970-71	1	0.03	0.11	1.2	2.70	2.73	Trace	95.7	ss
2	4971-72	1	0.02	0.10	0.4	2.73	2.74	Trace	94.9	ss
3	4972-73	1	UT	0.85	18.6	2.48	3.04	0	64.0	ss, cgl
4	4973-74	1	4.27	1.22	9.4	2.45	2.71	2.5	49.8	ss
5	4974-75	1	63	16	10.6	2.35	2.63	6.6	37.8	ss
6	4975-76	1	4.10	1.85	6.6	2.49	2.67	Trace	85.1	ss
7	4976-77	1	5.41	1.20	5.0	2.52	2.65	Trace	58.5	ss
8	4977-78	1	1.97	1.08	4.9	2.59	2.73	20.4	75.5	ss
9	4978-79	1	60	0.16	20.4	2.27	2.85	Trace	25.8	ss
<u>Kibbey</u>										
	<u>Core No. 3</u>	5215-5229	Rec. 14'							
10	5221-22	1	3.78	0.04	1.5	2.64	2.68	8.0	86.0	ss
11	5222-23	1	FT	125	6.5	2.45	2.62	25.6	53.9	ss
12	5223-24	1	0.13		7.8	2.48	2.69	5.3	17.7	ss, SP
13	5224-25	1	0.24		9.0	2.43	2.67	1.2	42.3	ss, SP
14	5225-26	1	2.16		8.7	2.44	2.67	Trace	81.6	ss, SP
15	5226-27	1	0.45		12.0	2.36	2.68	10.5	22.9	ss, SP
<u>B-4</u>										
	<u>Core No. 4</u>	5743-5763	Rec. 20'							
16	5747-48	1	0.23	0.17	0.4	2.61	2.62	1.2	95.0	dol
17	5748-49	1	0.18	0.04	0.1	2.66	2.67	8.1	87.2	dol
18	5749-50	1	FT	UT	0.4	2.67	2.68	2.1	94.2	dol

Sample No.	Representative of Feet	Footage	Permeability		Effective Porosity %	Density		Saturation % of Pore Space		Description
			Radial	Vertical		Bulk	Matrix	Residual Oil	Water	
19	5750-51	1	0.16	0.02	0.2	2.68	2.68	Trace	95.8	dol
20	5751-52	1	0.08	0.05	0.2	2.73	2.73	0	94.9	dol
21	5752-53	1	0.01	0.01	0.3	2.73	2.76	4.9	90.5	dol
<u>C-1 Zone</u>										
22	5824-25	1	FT	1.04	0.2	2.69	2.69	0	95.2	ls, VF
23	5825-26	1	FT	UT	0.2	2.69	2.70	17.6	78.1	ls, VF
24	5826-27	1	0.29	0.06	1.9	2.79	2.84	0	5.8	ls, anhy
25	5827-28	1	1.18	0.20	3.3	2.62	2.71	4.2	87.0	ls
<u>C-2 Zone</u>										
26	5828-29	1	0.19	0.77	0.4	2.66	2.67	1.1	95.1	ls
27	5829-30	1	0.26	UT	0.4	2.67	2.68	6.9	88.1	ls
28	5830-31	1	0.12	0.45	0.3	2.70	2.70	0	96.1	ls, VF
29	5831-32	1	10	0.41	0.7	2.65	2.67	0	63.5	ls
30	5832-33	1	0.01	UT	2.4	2.59	2.66	0.6	96.1	ls, VF
31	5833-34	1	0.01	UT	4.0	2.56	2.67	0.4	96.4	ls, VF
32	5834-35	1	UT	UT	0.4	2.64	2.65	Trace	96.6	ls, VF
<u>C-3 Zone</u>										
33	5840-41	1	0.11	UT	8.7	2.48	2.71	41.1	55.0	ls
34	5841-42	1	0.08	0.77	9.1	2.40	2.64	49.2	47.0	ls
35	5842-43	1	0.06	0.67	7.1	2.46	2.65	49.6	46.5	ls
36	5843-44	1	0.08	1.18	9.0	2.41	2.64	34.8	61.3	ls
37	5844-45	1	1.14	5.51	14.8	2.29	2.69	32.0	26.8	ls
38	5845-46	1	0.70	2.54	10.8	2.36	2.65	47.8	35.5	ls
39	5846-47	1	0.09	2.37	9.3	2.41	2.66	42.4	51.0	ls
40	5847-48	1	0.06	UT	1.1	2.63	2.66	37.8	11.4	ls, VF
41	5848-49	1	0.69	6.04	10.7	2.37	2.65	30.6	10.8	ls
42	5849-50	1	0.89	0.83	14.5	2.27	2.85	27.3	11.6	ls
<u>Mission Canyon</u>										
<u>Core No. 8</u>										
43	6104-05	1	0.43	0.41	2.8	2.58	2.66	9.3	29.4	ls, VF
44	6105-06	1	0.01	UT	0.3	2.66	2.66	40.4	55.5	ls, VF
45	6106-07	1	0.06	0.01	1.2	2.66	2.69	34.7	52.1	ls
46	6107-08	1	0.50	FT	1.0	2.66	2.68	50.5	45.2	ls, VF
47	6108-09	1	0.34	1.56	0.2	2.66	2.67	19.7	76.4	ls, VF

Sample No.	Representative of Pen	Footage	Permeability		Effective Porosity %	Density		Saturation % of Pore Space		Description
			Radial	Vertical		Bulk	Matrix	Residual Oil	Water	
48	6109-10	1	5.82	27	0.9	2.63	2.65	50.0	45.1	1s, VF
49	6110-11	1	0.58	1.36	0.2	2.64	2.64	Trace	94.2	1s, VF
50	6111-12	1	0.23	0.34	0.2	2.64	2.65	33.6	62.3	1s
51	6112-13	1	0.26	0.01-	0.2	2.64	2.64	52.3	47.1	1s, VF
52	6113-14	1	0.30	UT	1.1	2.64	2.67	10.1	57.4	1s, VF
53	6114-15	1	0.35	0.01	0.2	2.66	2.66	33.6	62.2	1s
<u>Core No. 9</u>										
54	6131-32	1	1.26	0.57	2.6	2.61	2.68	4.5	20.2	1s, VF
55	6132-33	1	0.15	1.93	2.5	2.62	2.68	6.6	23.9	1s
56	6133-34	1	0.27	2.09	0.4	2.66	2.67	0	83.2	1s, VF
57	6134-35	1	0.28	1.06	0.2	2.67	2.67	Trace	93.9	1s, VF
<u>Core No. 10</u> 6135-6155 Rec. 14'										
58	6135-36	1	0.67	9.59	1.5	2.63	2.67	Trace	19.1	1s, VF
59	6136-37	1	0.29	0.01-	3.2	2.59	2.67	6.0	16.3	1s
60	6137-38	1	0.80	0.04	2.7	2.56	2.63	Trace	28.8	1s, VF
61	6138-39	1	0.62	0.06	2.9	2.55	2.63	Trace	39.9	1s, VF
62	6139-40	1	0.25	0.10	2.2	2.61	2.67	Trace	22.3	1s
63	6140-41	1	0.19	0.08	0.6	2.64	2.66	Trace	94.7	1s
64	6141-42	1	0.51	UT	0.5	2.66	2.67	19.7	76.1	1s, VF
65	6142-43	1	0.49	UT	2.8	2.61	2.68	Trace	9.3	1s, VF
66	6143-44	1	0.24	0.63	0.6	2.66	2.67	Trace	97.1	1s, RF
67	6144-45	1	0.28	0.08	1.2	2.63	2.66	Trace	29.5	1s
68	6145-46	1	0.17	0.08	1.8	2.65	2.69	Trace	17.5	1s
69	6146-47	1	0.36	0.01	1.6	2.65	2.69	6.4	22.9	1s
70	6153-54	1	0.25	0.15	3.9	2.55	2.66	Trace	64.1	1s, VF
71	6154-55	1	0.65	0.11	2.2	2.61	2.66	36.4	22.7	1s
<u>Core No. 11</u> 6155-6156 Rec. 14'										
72	6155-56	1	0.37	0.39	0.3	2.67	2.68	Trace	95.1	1s, VF
<u>Core No. 12</u> 6157-6177 Rec. 20'										
73	6173-74	1	0.25	2.36	2.5	2.60	2.67	8.9	24.0	1s
74	6174-75	1	0.41	2.31	1.0	2.63	2.66	20.8	72.9	1s
75	6175-76	1	0.18	1.39	2.1	2.64	2.70	5.2	23.4	1s
76	6176-77	1	0.18	2.17	0.4	2.66	2.67	15.0	81.9	1s

Sample No.	Representative of Feet	Footage	Permeability		Effective Porosity %	Density		Saturation % of Pore Space		Description
			Radial	Vertical		Bulk	Matrix	Residual Oil	Water	
73A	6170-71	1	1.07	2.46	0.6	2.60	2.61	60.6	35.5	1s
73B	6171-72	1	0.23	4.07	0.3	2.63	2.64	43.3	52.6	1s
73C	6172-73	1	0.48	4.24	0.2	2.64	2.64	33.7	62.4	1s

LEGEND

anhy - - - Anhydrite	V - - - Vertical
calc - - - Calcareous	H - - - Horizontal
cgl - - - Conglomerate	O - - - Open
dol - - - Dolomite	N - - - No
ls - - - Limestone	M - - - Multiple
sdv - - - Sandy	S - - - Slight
sh - - - Shale	St - - - Stain
ss - - - Sandstone	Tr - - - Trace
shy - - - Shaly	vu - - - Vugs
sty - - - Stylolite	IS - - - Insufficient Sample
F - - - Fracture	UT - - - Unsuitable for Testing
C - - - Crack	SP - - - Small Plug
R - - - Random	PP - - - Pin Point

East Poplar Unit #101

Location: C NW/4 Section 14, T28N, R51E

Spacing - 160

Elevation: 2171' Cr. - 2181' K.B.

Spudded: 3:30 A.M., October 21, 1957

Completed: December 7, 1957

T.D.: 6248' Driller - 6255' Schlumberger

PSTD: 5898'

Prod. Zones: "C-5" Zone 5891'-5896'

Schlumberger Tops

	Depth	Datum	Thickness
Judith River	826	+1355	
Greenhorn	2409	- 228	
Muddy Sd	2971	- 790	
Dakota Silt	3191	-1010	
Piper Ls	4409	-2228	
Amsdem	4771	-2590	
Heath	4901	-2720	
Otter	5066	-2885	
Kibbey Sd	5191	-3010	
Kibbey Ls	5346	-3165	
Madison	5446	-3265	
A-1	**5548	-3367	5'
A-2	**5558	-3377	3'
A-3	**5570	-3389	10'
A-4	**5580	-3399	14'
B-1	**5683	-3502	7'
B-2	**5701	-3520	14'
B-3	**5722	-3541	5'
B-4	**5751	-3570	4'
B-5	5784	-3603	?
C-1	**5825	-3644	?
C-2	?	?	?
C-3	**5846	-3665	14'
C-4	*5870	-3689	6'
C-5	5888	-3707	8'
Fast	*6089	-3607	

**Probable prod. Zones (From DST structural position, etc.)

*Shows

Coring Intervals

Core #1	4969'-4979'	Rec. 10'	Heath Sandstone
Core #2	5176'-5215'	Rec. 38'	Above Kibbey Sandstone
Core #3	5215'-5229'	Rec. 14'	Kibbey Sandstone Porosity
Core #4	5743'-5763'	Rec. 20'	"B-4"
Core #5	5810'-5832'	Rec. 22'	"C-1"
Core #6	5832'-5865'	Rec. 34'	"C-3"
Core #7	5865'-5880'	Rec. 15'	"C-3"
Core #8	6100'-6115'	Rec. 15'	Fast Zone
Core #9	6115'-6135'	Rec. 20'	Fast Zone
Core #10	6135'-6155'	Rec. 12'	Fast Zone
Core #11	6155'-6156'	Rec. 3'	Fast Zone
Core #12	6157'-6177'	Rec. 20'	Fast Zone
Core #13	6177'-6192'	Rec. 15'	Fast Zone
Core #14	6192'-6193'	Rec. 1'	Fast Zone
Core #15	6194'-6203'	Rec. 8'	Fast Zone

Drill Stem Tests:

DST #1 4958'-4963', Heath Sandstone. Ran DST #1 w/ Halliburton on Heath Sandstone, NWC, 5/8" bot. ch. Tool opened w/ strong blow, remained same throughout test. Tool open 2 hrs., SI 20 mins. Rec. gas to surface in 2 hrs. Rec. 2310' clean oil, 120' oil and gas cut mud, no wtr. IBHFP-61#, FBHFP-800#, BHSIP-24CO#, Hydro-2648#.

DST #2 5208'-5229', Kibbey Sand. Ran DST #2 w/ Halliburton, 5/8" bot. ch., NWC. Tool open 2 hrs., closed 30 mins. Tool opened w/ weak blow, inc. to med. blow in 10 mins., remained same for 1 hr., then died. Rec. 90' gas, 180' oil and gas cut mud, 270' salt wtr. w/ show of oil in wtr.

DST #3 5824'-5832', "C-1" and "C-2" Zone. Ran DST #3 w/ Howco tester, single pkr., NWC, 5/8" bot. ch., Tool opened w/ weak blow, inc. to med. blow in 10 mins., and remained same throughout test. Tool open 2 hrs., SI 30 mins. Rec. 570' gas, 120' clean oil, 30' mud-cut oil, no free wtr. IBHFP--30#, FBHFP--62#, BHSIP--1425# (still building-clock appeared to have stopped momentarily), Hydro--3260#.

DST #4 5838'-5865', "C-3" Zone. Ran DST #4 w/ Howco tester, single pkr., 5/8" bot. ch., NWC. Tool opened w/ weak blow, inc. to med. blow in 5 mins. and remained same throughout test. Tool open 2 hrs., SI 30 mins. Rec. 630' gas, 60' clean oil, 300' mud-cut oil, 210' oil-and-gas-cut mud, 120' salty sulphur wtr. IBHFP--90#, FBHFP--346#, BHSIP--2980#, Hydro--3203#.

EAST POPLAR FIELD

(Continued on next page)

EAST POPLAR UNIT #101

ROOSEVELT COUNTY, MONTANA

EAST POPLAR UNIT #101 Continued

Drill Pipe Corrections (Made)

2900' Driller = 2980' SLM (+80')
4905' Driller = 4905' SLM (+ 0')
5180' Driller = 5176' SLM (- 4')
5490' Driller = 5490' SLM (+ 0')

Drill Stem Tests Continued

DST #5 6103'-6135', Fast Zone. Ran DST #5 w/ Howco single pkr, 5/8" bot. ch., NWC. Tool open 2 hrs., SI 30 mins. Tool opened w/ weak blow, remained same throughout test. Rec. 90' watery mud. IBHFP--15#, FBHFP--30#, BHSIP--118#, Hydro--3368#.

DST #6 6118'-6135', Fast Zone. Ran DST #6 w/ Halliburton single pkr. rathole test, NWC, 5/8" bot. ch. Tool opened w/ weak blow, remained same throughout test. Tool open 2 hrs., SI 30 mins. Rec. 60' mud. IBHFP--15#, FBHFP--15#, BHSIP--30#, Hydro--3310#.

DST #7 6131'-6156', Fast Zone. Ran DST #7 w/ Howco tester, 5/8" bot. ch., NWC. Tool opened w/ weak blow for 20 mins. Blow stopped--remained dead for rest of test. Tool open 2 hrs., SI 30 mins. Rec. 30' watery mud. IBHFP--15#, FBHFP--15#, BHSIP--30#, Hydro--3200#.

WORK ORDER CONTRACT
AND PRE-TREATMENT DATAATTACH TO
INVOICE & TICKET NO. 142627DISTRICT MidlandDATE 7-11-52

TO: HALLIBURTON SERVICES

YOU ARE HEREBY REQUESTED TO FURNISH EQUIPMENT AND SERVICEMEN TO DELIVER AND OPERATE

THE SAME AS AN INDEPENDENT CONTRACTOR TO: Murphy Corp (CUSTOMER)
AND DELIVER AND SELL PRODUCTS, SUPPLIES, AND MATERIALS FOR THE PURPOSE OF SERVICINGWELL NO. 101 LEASE East P. Hall Unit SEC. 14 TWP. 28N RANGE 51EFIELD East P. Hall Unit COUNTY Midland STATE TX OWNED BY M. J. Hall

THE FOLLOWING INFORMATION WAS FURNISHED BY THE CUSTOMER OR HIS AGENT

FORMATION NAME _____ TYPE _____

FORMATION THICKNESS _____ FROM _____ TO _____

PACKER: TYPE F-2 D. H. S. U. SET AT 3274

TOTAL DEPTH _____ MUD WEIGHT _____

BORE HOLE _____

INITIAL PROD: OIL _____ BPD, H₂O _____ BPD, GAS _____ MCFPRESENT PROD: OIL _____ BPD, H₂O _____ BPD, GAS _____ MCF

	NEW USED	WEIGHT	SIZE	FROM	TO	MAX. ALLOW. P.S.I.
CASING	<u>11</u>	<u>15.1"</u>	<u>5 1/2</u>	<u>0</u>		
LINER						
TUBING	<u>11</u>	<u>4 1/2</u>	<u>2 1/2</u>	<u>0</u>	<u>3274</u>	
OPEN HOLE						SHOTS/FT.
PERFORATIONS						
PERFORATIONS						
PERFORATIONS						

PREVIOUS TREATMENT: DATE _____ TYPE _____ MATERIALS _____

TREATMENT INSTRUCTIONS: TREAT THRU TUBING ☐ ANNULUS ☐ CASING ☐ TUBING/ANNULUS ☐ HYDRAULIC HORSEPOWER ORDERED _____

CUSTOMER OR HIS AGENT WARRANTS THE WELL IS IN PROPER CONDITION TO RECEIVE THE PRODUCTS, SUPPLIES, MATERIALS, AND SERVICES

THIS CONTRACT MUST BE SIGNED BEFORE WORK IS COMMENCED

As consideration, the above-named Customer agrees:

- To pay Halliburton in accord with the rates and terms stated in Halliburton's current price lists.
- Halliburton shall not be responsible for and Customer shall secure Halliburton against any liability for damage to property of Customer and of the well owner (if different from Customer), unless caused by the willful misconduct or gross negligence of Halliburton, this provision applying to but not limited to subsurface damage and surface damage arising from subsurface damage.
- Customer shall be responsible for and secure Halliburton against any liability for reservoir loss or damage, or property damage resulting from subsurface pressure, losing control of the well and/or a well blowout, unless such loss or damage is caused by the willful misconduct or gross negligence of Halliburton.
- Customer shall be responsible for and secure Halliburton against any and all liability of whatsoever nature for damages as a result of subsurface trespass, or an action in the nature thereof, arising from a service operation performed by Halliburton hereunder.
- Customer shall be responsible for and secure Halliburton against any liability for injury to or death of persons, other than employees of Halliburton, or damage to property (including, but not limited to, injury to the well), or any damages whatsoever, irrespective of cause, growing out of or in any way connected with the use of radioactive material in the well hole, unless such damage shall be caused by the willful misconduct or gross negligence of Halliburton.
- Halliburton makes no guarantee of the effectiveness of the products, supplies or materials, nor of the results of any treatment or service.
- Customer shall, at its risk and expense, attempt to recover any Halliburton equipment, tools or instruments which are lost in the well and if such equipment, tools or instruments are not recovered, Customer shall pay Halliburton its replacement cost unless such loss is due to the sole negligence of Halliburton. If Halliburton equipment, tools or instruments are damaged in the well, Customer shall pay Halliburton the lesser of its replacement cost or the cost of repairs unless such damage is caused by the sole negligence of Halliburton. In the case of equipment, tools or instruments for marine operations, Customer shall, in addition to the foregoing, be fully responsible for loss of or damage to any of Halliburton's equipment, tools or instruments which occurs at any time after delivery to Customer at the landing until returned to the landing, unless such loss or damage is caused by the sole negligence of Halliburton.
- Because of the uncertainty of variable well conditions and the necessity of relying on facts and supporting services furnished by others, Halliburton is unable to guarantee the accuracy of any chart interpretation, research analysis, job recommendation or other data furnished by Halliburton. Halliburton personnel will use their best efforts in gathering such information and their best judgment in interpreting it, but Customer agrees that Halliburton shall not be responsible for any damages arising from the use of such information except where due to Halliburton's gross negligence or willful misconduct in the preparation or furnishing of it.
- Halliburton warrants only title to the products, supplies and materials and that the same are free from defects in workmanship and materials. THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE WHICH EXTEND BEYOND THOSE STATED IN THE IMMEDIATELY PRECEDING SENTENCE. Halliburton's liability and Customer's exclusive remedy in any cause of action (whether in contract, tort, breach of warranty or otherwise) arising out of the sale or use of any products, supplies or materials in expressly limited to the replacement of such products, supplies or materials on their return to Halliburton or, at Halliburton's option, to the allowance to the Customer of credit for the cost of such items. In no event shall Halliburton be liable for special, incidental, indirect, punitive or consequential damages.
- Invoices payable NET by the 20th of the following month after date of invoice. Upon Customer's default in payment of Customer's account by the last day of the month following the month in which the invoice is dated, Customer agrees to pay interest thereon after default at the highest lawful contract rate applicable but never to exceed 18% per annum. In the event it becomes necessary to employ an attorney to enforce collection of said account, Customer agrees to pay all collection costs and attorney fees in the amount of 20% of the amount of the unpaid account.
- This contract shall be governed by the law of the state where services are performed or equipment or materials are furnished.
- Halliburton shall not be bound by any changes or modifications in this contract, except where such change or modification is made in writing by a duly authorized executive officer of Halliburton.

I HAVE READ AND UNDERSTAND THIS CONTRACT AND REPRESENT
THAT I AM AUTHORIZED TO SIGN THE SAME AS CUSTOMER'S AGENT.SIGNED [Signature] CUSTOMER

DATE _____

We certify that the Fair Labor Standards Act of 1938, as amended, has been complied with in the production of goods and/or with respect to services furnished under this contract. TIME _____ A.M. P.M.

CUSTOMER

JOB LOG

CL MER March 1964 PAGE NO. 1

JOB TYPE *17 1000* DATE *7/11*

FORM 2013 R-2

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
11	11:00							11:00 - 11:15
	11:15							11:15 - 11:30
	11:30							11:30 - 11:45
	11:45							11:45 - 12:00
12	12:00							12:00 - 12:15
	12:15							12:15 - 12:30
	12:30							12:30 - 12:45
	12:45							12:45 - 1:00
	1:00							1:00 - 1:15
	1:15							1:15 - 1:30
	1:30							1:30 - 1:45
	1:45							1:45 - 2:00
	2:00							2:00 - 2:15
	2:15							2:15 - 2:30
	2:30							2:30 - 2:45
	2:45							2:45 - 3:00
	3:00							3:00 - 3:15
	3:15							3:15 - 3:30
	3:30							3:30 - 3:45
	3:45							3:45 - 4:00
	4:00							4:00 - 4:15
	4:15							4:15 - 4:30
	4:30							4:30 - 4:45
	4:45							4:45 - 5:00
	5:00							5:00 - 5:15
	5:15							5:15 - 5:30
	5:30							5:30 - 5:45
	5:45							5:45 - 6:00
	6:00							6:00 - 6:15
	6:15							6:15 - 6:30
	6:30							6:30 - 6:45
	6:45							6:45 - 7:00
	7:00							7:00 - 7:15
	7:15							7:15 - 7:30
	7:30							7:30 - 7:45
	7:45							7:45 - 8:00
	8:00							8:00 - 8:15
	8:15							8:15 - 8:30
	8:30							8:30 - 8:45
	8:45							8:45 - 9:00
	9:00							9:00 - 9:15
	9:15							9:15 - 9:30
	9:30							9:30 - 9:45
	9:45							9:45 - 10:00
	10:00							10:00 - 10:15
	10:15							10:15 - 10:30
	10:30							10:30 - 10:45
	10:45							10:45 - 11:00
	11:00							11:00 - 11:15
	11:15							11:15 - 11:30
	11:30							11:30 - 11:45
	11:45							11:45 - 12:00
	12:00							12:00 - 12:15
	12:15							12:15 - 12:30
	12:30							12:30 - 12:45
	12:45							12:45 - 1:00
	1:00							1:00 - 1:15
	1:15							1:15 - 1:30
	1:30							1:30 - 1:45
	1:45							1:45 - 2:00
	2:00							2:00 - 2:15
	2:15							2:15 - 2:30
	2:30							2:30 - 2:45
	2:45							2:45 - 3:00
	3:00							3:00 - 3:15
	3:15							3:15 - 3:30
	3:30							3:30 - 3:45
	3:45							3:45 - 4:00
	4:00							4:00 - 4:15
	4:15							4:15 - 4:30
	4:30							4:30 - 4:45
	4:45							4:45 - 5:00
	5:00							5:00 - 5:15
	5:15							5:15 - 5:30
	5:30							5:30 - 5:45
	5:45							5:45 - 6:00
	6:00							6:00 - 6:15
	6:15							6:15 - 6:30
	6:30							6:30 - 6:45
	6:45							6:45 - 7:00
	7:00							7:00 - 7:15
	7:15							7:15 - 7:30
	7:30							7:30 - 7:45
	7:45							7:45 - 8:00
	8:00							8:00 - 8:15
	8:15							8:15 - 8:30
	8:30							8:30 - 8:45
	8:45							8:45 - 9:00
	9:00							9:00 - 9:15
	9:15							9:15 - 9:30
	9:30							9:30 - 9:45
	9:45							9:45 - 10:00
	10:00							10:00 - 10:15
	10:15							10:15 - 10:30
	10:30							10:30 - 10:45
	10:45							10:45 - 11:00
	11:00							11:00 - 11:15
	11:15							11:15 - 11:30
	11:30							11:30 - 11:45
	11:45							11:45 - 12:00
	12:00							12:00 - 12:15
	12:15							12:15 - 12:30
	12:30							12:30 - 12:45
	12:45							12:45 - 1:00
	1:00							1:00 - 1:15
	1:15							1:15 - 1:30
	1:30							1:30 - 1:45
	1:45							1:45 - 2:00
	2:00							2:00 - 2:15
	2:15							2:15 - 2:30
	2:30							2:30 - 2:45
	2:45							2:45 - 3:00
	3:00							3:00 - 3:15
	3:15							3:15 - 3:30
	3:30							3:30 - 3:45
	3:45							3:45 - 4:00
	4:00							4:00 - 4:15
	4:15							4:15 - 4:30
	4:30							4:30 - 4:45
	4:45							4:45 - 5:00
	5:00							5:00 - 5:15
	5:15							5:15 - 5:30
	5:30							5:30 - 5:45
	5:45							5:45 - 6:00
	6:00							6:00 - 6:15
	6:15							6:15 - 6:30
	6:30							6:30 - 6:45
	6:45							6:45 - 7:00
	7:00							7:00 - 7:15
	7:15							7:15 - 7:30
	7:30							7:30 - 7:45
	7:45							7:45 - 8:00
	8:00							8:00 - 8:15
	8:15							8:15 - 8:30
	8:30							8:30 - 8:45
	8:45							8:45 - 9:00
	9:00							9:00 - 9:15
	9:15							9:15 - 9:30
	9:30							9:30 - 9:45
	9:45							9:45 - 10:00
	10:00							10:00 - 10:15
	10:15							10:15 - 10:30
	10:30							10:30 - 10:45
	10:45							10:45 - 11:00
	11:00							11:00 - 11:15
	11:15							11:15 - 11:30
	11:30							11:30 - 11:45
	11:45							11:45 - 12:00
	12:00							12:00 - 12:15
	12:15							12:15 - 12:30
	12:30							12:30 - 12:45
	12:45							12:45 - 1:00
	1:00							1:00 - 1:15
	1:15							1:15 - 1:30
	1:30							1:30 - 1:45
	1:45							1:45 - 2:00
	2:00							2:00 - 2:15
	2:15							2:15 - 2:30
	2:30							2:30 - 2:45
	2:45							2:45 - 3:00
	3:00							3:00 - 3:15
	3:15							3:15 - 3:30
	3:30							3:30 - 3:45
	3:45							3:45 - 4:00
	4:00							4:00 - 4:15
	4:15							4:15 - 4:30
	4:30							4:30 - 4:45
	4:45							4:45 - 5:00
	5:00							5:00 - 5:15
	5:15							5:15 - 5:30
	5:30							5:30 - 5:45
	5:45							5:45 - 6:00
	6:00							6:00 - 6:15
	6:15							6:15 - 6:30
	6:30							6:30 - 6:45
	6:45							6:45 - 7:00
	7:00							7:00 - 7:15
	7:15							7:15 - 7:30
	7:30							7:30 - 7:45
	7:45							7:45 - 8:00
	8:00							8:00 - 8:15
	8:15							8:15 - 8:30
	8:30							8:30 - 8:45
	8:45							8:45 - 9:00
	9:00							9:00 - 9:15
	9:15							9:15 - 9:30
	9:30							9:30 - 9:45
	9:45							9:45 - 10:00
	10:00							10:00 - 10:15
	10:15							10:15 - 10:30
	10:30							10:30 - 10:45
	10:45							10:45 - 11:00
	11:00							11:00 - 11:15
	11:15							11:15 - 11:30
	11:30							11:30 - 11:45
	11:45							11:45 - 12:00
	12:00							12:00 - 12:15
	12:15							12:15 - 12:30
	12:30							12:30 - 12:45
	12:45							12:45 - 1:00
	1:00							1:00 - 1:15
	1:15							1:15 - 1:30
	1:30							1:30 - 1:45
	1:45							1:45 - 2:00
	2:00							2:00 - 2:15
	2:15							2:15 - 2:30
	2:30							2:30 - 2:45
	2:45							2:45 - 3:00
	3:00							3:00 - 3:15
	3:15							3:15 - 3:30
	3:30							3:30 - 3:45
	3:45							3:45 - 4:00
	4:00							4:00 - 4:15
	4:15							4:15 - 4:30
	4:30							4:30 - 4:45
	4:45							4:45 - 5:00

PATENT

HALLIBURTON SERVICES

Denver, Colorado 80202

A Division of Halliburton Company

TICKET
NO. 648627-1

FORM 1906 R-11

WELL NO. - FARM OR LEASE NAME 01 East Rphc Unit		COUNTY Lincoln	STATE MT	CITY / OFFSHORE LOCATION	DATE 7-14-87
CHARGE TO Murphy Corp		OWNER Murphy Corp		TICKET TYPE (CHECK ONE) SERVICE <input checked="" type="checkbox"/> SALES <input type="checkbox"/>	
ADDRESS		CONTRACTOR H.H. Well Service		LOCATION 1	
CITY, STATE, ZIP		SHIPPED VIA Co Express		LOCATION 2	
WELL TYPE 01 oil		WELL CATEGORY 02 water		LOCATION 3	
TYPE AND PURPOSE OF JOB 175 Tool Service		WELL PERMIT NO. B-		REFERRAL LOCATION	

As consideration, the above-named Customer agrees to pay Halliburton in accord with the rates and terms stated in Halliburton's current price lists. Invoices payable NET by the 20th of the following month after date of invoice. Upon Customer's default in payment of Customer's account by the last day of the month following the month in which the invoice is dated, Customer agrees to pay interest thereon after default at the highest lawful contract rate applicable, but never to exceed 18% per annum. In the event it becomes necessary to employ an attorney to enforce collection of said account, Customer agrees to pay all collection costs and attorney fees in the amount of 20% of the amount of the unpaid account. These terms and conditions shall be governed by the law of the state where services are performed or equipment or materials are furnished.

Halliburton warrants only title to the products, supplies and materials and that the same are free from defects in workmanship and materials. THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE WHICH EXTEND BEYOND THOSE STATED IN THE IMMEDIATELY PRECEDING SENTENCE. Halliburton's liability and customer's exclusive remedy in any cause of action (whether in contract, tort, product liability, breach of warranty or otherwise) arising out of the sale or use of any products, supplies or materials is expressly limited to the replacement of such products, supplies or materials on their return to Halliburton or, at Halliburton's option, to the allowance to the customer of credit for the cost of such items. In no event shall Halliburton be liable for special, incidental, indirect, punitive or consequential damages.

PRICE REFERENCE	SECONDARY REF OR PART NO.	L O C	ACCOUNT	DESCRIPTION	UNITS 1		UNITS 2		UNIT PRICE	AMOUNT	
					QTY	MEAS	QTY	MEAS			
R100-115				MILEAGE 7-11-87	100	MI			7.00	700.00	
74	802-341			7-20-11 SW	1	EA	1	EA		10.94	10.94
				2 1/2 27							
R100-115				oil	1	EA			7.00	7.00	
814-520				Service charge	1	EA			20.00	20.00	
813-002				material	1	EA			15.00	15.00	

THIS IS
NOT AN INVOICE

AS PER ATTACHED BULK MATERIAL DELIVERY TICKET NO.

B-

WAS JOB SATISFACTORILY COMPLETED?

WAS OPERATION OF EQUIPMENT SATISFACTORY?

WAS PERFORMANCE OF PERSONNEL SATISFACTORY?

X Garold HaysX GAROLD HAYSON

CUSTOMER OR HIS AGENT (SIGNATURE)

WE CERTIFY THAT THE FAIR LABOR STANDARDS ACT OF 1938, AS AMENDED HAS BEEN COMPLIED WITH IN THE PRODUCTION OF GOODS AND OR WITH RESPECT TO SERVICES FURNISHED UNDER THIS CONTRACT.

HALLIBURTON
APPROVAL

HALLIBURTON OPERATOR

CUSTOMER

SUB
TOTALAPPLICABLE TAXES WILL
BE ADDED ON INVOICE.



A DIVISION OF HALLIBURTON COMPANY

TICKET

NO. 363486-2

FORM 1906 R9

PAGE 1 OF 1 PAGES

WELL NO. - FARM OR LEASE NAME <u>111 E.P.U.</u>		COUNTY <u>Russell</u>	STATE <u>MT</u>	CITY/OFFSHORE LOCATION		DATE <u>7-11-88</u>
CHARGE TO <u>Murphy</u>		OWNER <u>SHINE</u>		TICKET TYPE (CHECK ONE) SERVICE <input checked="" type="checkbox"/> SALES <input type="checkbox"/>		NITROGEN JOB YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
ADDRESS		CONTRACTOR <u>H+H</u>		LOCATION <u>16/1 mile</u>		CODE <u>55530</u>
CITY, STATE, ZIP		SHIPPED VIA <u>H+H</u>		FREIGHT CHARGES <input type="checkbox"/> PPD <input type="checkbox"/> COLLECT		LOCATION <u>2</u>
DUNCAN USE ONLY		DELIVERED TO <u>Location</u>		LOCATION <u>3</u>		CODE
		ORDER NO.		REFERRAL LOCATION		
		WELL TYPE <u>Oil</u>		WELL CATEGORY <u>CD workover</u>		WELL PERMIT NO. <u>B-711371</u>
		TYPE AND PURPOSE OF JOB <u>425 Kill 12511</u>				

As consideration, the above-named Customer agrees to pay Halliburton in accord with the rates and terms stated in Halliburton's current price lists. Invoices payable NET by the 20th of the following month after date of invoice. Upon Customer's default in payment of Customer's account by the last day of the month following the month in which the invoice is dated, Customer agrees to pay interest thereon after default at the highest lawful contract rate applicable but never to exceed 18% per annum. In the event it becomes necessary to employ an attorney to enforce collection of said account, Customer agrees to pay all collection costs and attorney fees in the amount of 10% of the amount of the unpaid account. These terms and conditions shall be governed by the law of the state where services are performed or equipment or materials are furnished.

Halliburton warrants only title to the products, supplies and materials and that the same are free from defects in workmanship and materials. THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE WHICH EXTEND BEYOND THOSE STATED IN THE IMMEDIATE PRECEDING SENTENCE. Halliburton's liability and customer's exclusive remedy in any cause of action (whether in contract, tort, product liability, breach of warranty or otherwise) arising out of the sale or use of any product, supplies or materials is expressly limited to the replacement of such products, supplies or materials on their return to Halliburton or, at Halliburton's option, to the allowance to the customer of credit for the cost of such items. In no event shall Halliburton be liable for special, incidental, indirect, punitive or consequential damages.

PRICE REFERENCE	SECONDARY REF OR PART NO.	L O C.	ACCOUNT	DESCRIPTION	UNITS 1		UNITS 2		UNIT PRICE	AMOUNT	
					QTY	MEAS	QTY	MEAS			
R001-117				MILEAGE (7-11-88)	137	mi			2.15	294	55
R001-205				pump chg (7-11-88)	9	psu	4	hrs		715	00
R100-115				Mileage (7-11-88)	137	mi			0.90	123	30
R007-134	R009-019			pump chg	5876	FT	8	hrs		1735	50
R009-027				Additional 1 hour	1	FT	8	hrs		1250	00
THIS IS NOT AN INVOICE											

AS PER ATTACHED BULK MATERIAL DELIVERY TICKET NO.

B- 711371

2654 44

WAS JOB SATISFACTORILY COMPLETED?	
WAS OPERATION OF EQUIPMENT SATISFACTORY?	
WAS PERFORMANCE OF PERSONNEL SATISFACTORY?	
X <u>Gravel Hagadone</u>	
CUSTOMER OR HIS AGENT (PLEASE PRINT)	
X <u>Gravel Hagadone</u>	
CUSTOMER OR HIS AGENT (SIGNATURE)	

TAX REFERENCES

SUB TOTAL

TAX

TAX

TAX

TOTAL

James A. Scapholt
HALLIBURTON OPERATOR

WE CERTIFY THAT THE FAIR LABOR STANDARDS
ACT OF 1938, AS AMENDED HAS BEEN COMPLIED
WITH IN THE PRODUCTION OF GOODS AND OR
WITH RESPECT TO SERVICES FURNISHED UNDER
THIS CONTRACT.

CUSTOMER



HALLIBURTON
SERVICES

JOB SUMMARY

HALLIBURTON
DIVISION
HALLIBURTON
LOCATION

Denver
Albuquerque

BILLED ON
TICKET NO. *642627*

WELL DATA

FIELD *East P. P. 14* UNIT *SEC. 14* TWP. *29* RNG. *51* COUNTY *Lincoln* STATE *MT*

FORMATION NAME _____ TYPE _____
FORMATION THICKNESS _____ FROM _____ TO _____
INITIAL PROD: OIL _____ BPD. WATER _____ BPD. GAS _____ MCFD
PRESENT PROD: OIL _____ BPD. WATER _____ BPD. GAS _____ MCFD
COMPLETION DATE _____ MUD TYPE _____ MUD WT. _____
PACKER TYPE *E-20 Hsu* SET AT *5274*
BOTTOM HOLE TEMP. _____ PRESSURE _____
MISC. DATA _____ TOTAL DEPTH _____

	NEW USED	WEIGHT	SIZE	FROM	TO	MAXIMUM PSI ALLOWABLE
CASING	<i>U</i>	<i>15.5</i>	<i>5 1/2</i>	<i>0</i>		
LINER						
TUBING	<i>U</i>	<i>4.7</i>	<i>2 1/2</i>	<i>0</i>	<i>1074</i>	
OPEN HOLE						SHOTS/FT. _____
PERFORATIONS						
PERFORATIONS						
PERFORATIONS						

JOB DATA

CALLER OUT DATE TIME <i>1445</i>	ON LOCATION DATE TIME <i>1400</i>	JOB STARTED DATE TIME <i>1725</i>	JOB COMPLETED DATE TIME <i>1900</i>
--	---	---	---

PERSONNEL AND SERVICE UNITS

NAME	UNIT NO. & TYPE	LOCATION
<i>Karl T. Smith</i>	<i>2-24</i> <i>H.K.</i>	<i>L.H.</i>

TOOLS AND ACCESSORIES

TYPE AND SIZE	QTY.	MAKE
FLOAT COLLAR		
FLOAT SHOE		
GUIDE SHOE		
CENTRALIZERS		
BOTTOM PLUG		
TOP PLUG		
HEAD		
PACKER <i>E-20 Hsu</i>	<i>1</i>	<i>H.K.</i>
OTHER <i>manifold</i>	<i>1</i>	<i>H.K.</i>

MATERIALS

TREAT. FLUID _____ DENSITY _____ LB/GAL. API
DISPL. FLUID _____ DENSITY _____ LB/GAL. API
PROP. TYPE _____ SIZE _____ LB.
PROP. TYPE _____ SIZE _____ LB.
ACID TYPE _____ GAL. _____
ACID TYPE _____ GAL. _____
ACID TYPE _____ GAL. _____
SURFACTANT TYPE _____ GAL. _____ IN
NE AGENT TYPE _____ GAL. _____ IN
FLUID LOSS ADD. TYPE _____ GAL.-LB. _____ IN
GELLING AGENT TYPE _____ GAL.-LB. _____ IN
FRIC. RED. AGENT TYPE _____ GAL.-LB. _____ IN
BREAKER TYPE _____ GAL.-LB. _____ IN
BLOCKING AGENT TYPE _____ GAL.-LB. _____
PERF PAC BALLS TYPE _____ QTY. _____
OTHER _____
OTHER _____

DEPARTMENT *T-1*
DESCRIPTION OF JOB *5274 E-20 Hsu*
JOB DONE THRU: TUBING ☐ CASING ☐ ANNULUS ☐ TEG./ANN. ☒
CUSTOMER REPRESENTATIVE *X Gerald K. Hyslop*
HALLIBURTON OPERATOR *Karl T. Smith* COPIES REQUESTED _____

CEMENT DATA

STAGE	NUMBER OF SACKS	TYPE	API CLASS	BRAND	BULK SACKED	ADDITIVES	YIELD CU. FT./SK.	MIXED LBS./GAL.
<i>1</i>		<i>Flowline</i>						

PRESSURES IN PSI

CIRCULATING _____ DISPLACEMENT _____
BREAKDOWN _____ MAXIMUM _____
AVERAGE _____ FRACTURE GRADIENT _____
SHUT-IN: INSTANT _____ 5-MIN. _____ 15-MIN. _____

HYDRAULIC HORSEPOWER

ORDERED _____ AVAILABLE _____ USED _____
AVERAGE RATES IN BPM

TREATING _____ DISPL. _____ OVERALL _____
CEMENT LEFT IN PIPE

FEET _____ REASON _____

SUMMARY

PRESLUSH: BBL.-GAL. _____ TYPE _____
LOAD & SHDN: BBL.-GAL. _____ PADI: BBL.-GAL. _____
TREATMENT: BBL.-GAL. _____ DISPL: BBL.-GAL. _____
CEMENT SLURRY: BBL.-GAL. _____
TOTAL VOLUME: BBL.-GAL. _____

VOLUMES

REMARKS

HALLIBURTON SERVICES

JOB LOG

WELL NO. 101

LEASE EPH

TICKET NO. 317486

OIL COMER Mud

PAGE NO. 1

JOB TYPE Mix Mud

DATE 7-11-12

FORM 2013 R-2

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
7/1	0930							on loc Rig up
	1000		140					Mix Mud
	1130	1.5	110				600	pull down during the pump
	1230	2	25			500		Close down
	1330							Release
7/2	1030							on loc Rig up
	1145							Test pump & lines
	1155	2	135				900	Well hole / salt water in
	1305	2	10			600		String out T & Rig Rate with
	1310	2	15.4			500		cut
	1319	2				400		ding
	1322	2	8			400		cut to joint
	1334	1/2	12			0		slow Rate
	1338	1/2	20.5			250		" "
	1348		23.5			450		stg
	1357	1	34			750		decide to over flush pump down
	1404	2	34				900	String out - Pump
	1736	1	3			550		String out Rig Rate
	1740	2	10			500		String out, Front end with
	1745	2	15.4			500		cut
	1751	2	4			450		ding to spot
	1753							String T & W
	1755	1				0		cut to ding
	1802	1/4	15 1/2			550		slow Rate
	1815	1/2	19			1200		" "
	1824		23			1500		stg
	1837	1/8	2			500		pump
	1838		23 1/2			2000		start in
	1840	2	35				250	String out T & Pump
	1900							Produced approx 75 bbl Slurry
								Job Complete

CUSTOMER

JOB LOG

TICKET NO.

PAGE NO.

DATE _____

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
11	11:00							11:00 - 11:05
								11:05 - 11:10
								11:10 - 11:15
								11:15 - 11:20
								11:20 - 11:25
								11:25 - 11:30
								11:30 - 11:35
								11:35 - 11:40
								11:40 - 11:45
								11:45 - 11:50
								11:50 - 11:55
								11:55 - 12:00
								12:00 - 12:05
								12:05 - 12:10
								12:10 - 12:15
								12:15 - 12:20
								12:20 - 12:25
								12:25 - 12:30
								12:30 - 12:35
								12:35 - 12:40
								12:40 - 12:45
								12:45 - 12:50
								12:50 - 12:55
								12:55 - 1:00
								1:00 - 1:05
								1:05 - 1:10
								1:10 - 1:15
								1:15 - 1:20
								1:20 - 1:25
								1:25 - 1:30
								1:30 - 1:35
								1:35 - 1:40
								1:40 - 1:45
								1:45 - 1:50
								1:50 - 1:55
								1:55 - 2:00
								2:00 - 2:05
								2:05 - 2:10
								2:10 - 2:15
								2:15 - 2:20
								2:20 - 2:25
								2:25 - 2:30
								2:30 - 2:35
								2:35 - 2:40
								2:40 - 2:45
								2:45 - 2:50
								2:50 - 2:55
								2:55 - 3:00
								3:00 - 3:05
								3:05 - 3:10
								3:10 - 3:15
								3:15 - 3:20
								3:20 - 3:25
								3:25 - 3:30
								3:30 - 3:35
								3:35 - 3:40
								3:40 - 3:45
								3:45 - 3:50
								3:50 - 3:55
								3:55 - 4:00
								4:00 - 4:05
								4:0

RETAIN



HALLIBURTON SERVICES

Duncan, Oklahoma 73838

A Halliburton Company

FORM 1908 R-S

WORK ORDER CONTRACT AND PRE-TREATMENT DATA

ATTACH TO
INVOICE & TICKET NO. 762486

DISTRICT Williston

DATE 7-11-88

TO: HALLIBURTON SERVICES YOU ARE HEREBY REQUESTED TO FURNISH EQUIPMENT AND SERVICEMEN TO DELIVER AND OPERATE

THE SAME AS AN INDEPENDENT CONTRACTOR TO: Murphy (CUSTOMER)
AND DELIVER AND SELL PRODUCTS, SUPPLIES, AND MATERIALS FOR THE PURPOSE OF SERVICING

WELL NO. 101 LEASE ERU SEC. 14 TWP. 28N RANGE 51E

FIELD East Rader COUNTY Roosevelt STATE MT OWNED BY same

THE FOLLOWING INFORMATION WAS FURNISHED BY THE CUSTOMER OR HIS AGENT

FORMATION NAME	TYPE	NEW USED	WEIGHT	SIZE	FROM	TO	MAX. ALLOW. P.S.I.
CASING		<u>U</u>	<u>15.5</u>	<u>5 1/2</u>	<u>153</u>	<u>591.2</u>	
LINER							
TUBING		<u>U</u>	<u>4.7</u>	<u>2 3/8</u>	<u>153</u>	<u>585.1</u>	
OPEN HOLE							SHOTS/FT.
PERFORATIONS							
PERFORATIONS							
PERFORATIONS							

FORMATION THICKNESS _____ FROM _____ TO _____

PACKER: TYPE _____ SET AT _____

TOTAL DEPTH _____ MUD WEIGHT _____

BORE HOLE _____

INITIAL PROD: OIL _____ BPD, H₂O _____ BPD, GAS _____ MCF

PRESENT PROD: OIL _____ BPD, H₂O _____ BPD, GAS _____ MCF

PREVIOUS TREATMENT: DATE _____ TYPE _____ MATERIALS _____

TREATMENT INSTRUCTIONS: TREAT THRU TUBING ☐ ANNULUS ☐ CASING ☐ TUBING/ANNULUS ☒ HYDRAULIC HORSEPOWER ORDERED _____

Max Mud Kill well
Squeeze

CUSTOMER OR HIS AGENT WARRANTS THE WELL IS IN PROPER CONDITION TO RECEIVE THE PRODUCTS, SUPPLIES, MATERIALS, AND SERVICES

THIS CONTRACT MUST BE SIGNED BEFORE WORK IS COMMENCED

As consideration, the above-named Customer agrees:

- To pay Halliburton in accord with the rates and terms stated in Halliburton's current price lists.
- Halliburton shall not be responsible for and Customer shall secure Halliburton against any liability for damage to property of Customer and of the well owner (if different from Customer), unless caused by the willful misconduct or gross negligence of Halliburton, this provision applying to but not limited to subsurface damage and surface damage arising from subsurface damage.
- Customer shall be responsible for and secure Halliburton against any liability for reservoir loss or damage, or property damage resulting from subsurface pressure, losing control of the well and/or a well blowout, unless such loss or damage is caused by the willful misconduct or gross negligence of Halliburton.
- Customer shall be responsible for and secure Halliburton against any and all liability of whatsoever nature for damages as a result of subsurface trespass, or an action in the nature thereof, arising from a service operation performed by Halliburton hereunder.
- Customer shall be responsible for and secure Halliburton against any liability for injury to or death of persons, other than employees of Halliburton, or damage to property (including, but not limited to, injury to the well), or any damages whatsoever, irrespective of cause, growing out of or in any way connected with the use of radioactive material in the well hole, unless such damage shall be caused by the willful misconduct or gross negligence of Halliburton.
- Halliburton makes no guarantee of the effectiveness of the products, supplies or materials, nor of the results of any treatment or service.
- Customer shall, at its risk and expense, attempt to recover any Halliburton equipment, tools or instruments which are lost in the well and if such equipment, tools or instruments are not recovered, Customer shall pay Halliburton its replacement cost unless such loss is due to the sole negligence of Halliburton. If Halliburton equipment, tools or instruments are damaged in the well, Customer shall pay Halliburton the lesser of its replacement cost or the cost of repairs unless such damage is caused by the sole negligence of Halliburton. In the case of equipment, tools or instruments for marine operations, Customer shall, in addition to the foregoing, be fully responsible for loss of or damage to any of Halliburton's equipment, tools or instruments which occurs at any time after delivery to Customer at the landing until returned to the landing, unless such loss or damage is caused by the sole negligence of Halliburton.
- Because of the uncertainty of variable well conditions and the necessity of relying on facts and supporting services furnished by others, Halliburton is unable to guarantee the accuracy of any chart interpretation, research analysis, job recommendation or other data furnished by Halliburton. Halliburton personnel will use their best efforts in gathering such information and their best judgment in interpreting it, but Customer agrees that Halliburton shall not be responsible for any damages arising from the use of such information except where due to Halliburton's gross negligence or willful misconduct in the preparation or furnishing of it.
- Halliburton warrants only title to the products, supplies and materials and that the same are free from defects in workmanship and materials. THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE WHICH EXTEND BEYOND THOSE STATED IN THE IMMEDIATELY PRECEDING SENTENCE. Halliburton's liability and Customer's exclusive remedy in any cause of action (whether in contract, tort, breach of warranty or otherwise) arising out of the sale or use of any products, supplies or materials is expressly limited to the replacement of such products, supplies or materials on their return to Halliburton or, at Halliburton's option, to the allowance to the Customer of credit for the cost of such items. In no event shall Halliburton be liable for special, incidental, indirect, punitive or consequential damages.
- Invoices payable NET by the 20th of the following month after date of invoice. Upon Customer's default in payment of Customer's account by the last day of the month following the month in which the invoice is dated, Customer agrees to pay interest thereon after default at the highest lawful contract rate applicable but never to exceed 18% per annum. In the event it becomes necessary to employ an attorney to enforce collection of said account, Customer agrees to pay all collection costs and attorney fees in the amount of 20% of the amount of the unpaid account.
- This contract shall be governed by the law of the state where services are performed or equipment or materials are furnished.
- Halliburton shall not be bound by any changes or modifications in this contract, except where such change or modification is made in writing by a duly authorized executive officer of Halliburton.

I HAVE READ AND UNDERSTAND THIS CONTRACT AND REPRESENT THAT I AM AUTHORIZED TO SIGN THE SAME AS CUSTOMER'S AGENT.

SIGNED [Signature] CUSTOMER

DATE 7-11-88

TIME 10:00 A.M./P.M.

We certify that the Fair Labor Standards Act of 1938, as amended, has been complied with in the production of goods and/or with respect to services furnished under this contract.

QUOTED



JOB SUMMARY

HALLIBURTON
DIVISION
HALLIBURTON
LOCATION

Denver
Glendive

BILLED ON
TICKET NO. 313486

CUSTOMER

FIELD East Pryor

WELL DATA
SEC. 14 TWP. 28N RANG. 51E COUNTY Roosevelt STATE MT

FORMATION NAME _____ TYPE _____
FORMATION THICKNESS _____ FROM _____ TO _____
INITIAL PROD: OIL _____ SPD. WATER _____ SPD. GAS _____ MCFD
PRESENT PROD: OIL _____ SPD. WATER _____ SPD. GAS _____ MCFD
COMPLETION DATE _____ MUD TYPE _____ MUD WT. _____
PACKER TYPE _____ SET AT _____
BOTTOM HOLE TEMP. _____ PRESSURE _____
MISC. DATA _____ TOTAL DEPTH _____

	NEW USED	WEIGHT	SIZE	FROM	TO	MAXIMUM PSI ALLOWABLE
CASING	4	1515	5 1/2 KB	5900		
LINER						
TUBING	4	47	2 3/8 KB	5884		
OPEN HOLE						SHOTS/FT. 1
PERFORATIONS						
PERFORATIONS						
PERFORATIONS						

TOOLS AND ACCESSORIES

TYPE AND SIZE	QTY.	MAKE
FLOAT COLLAR		
FLOAT SHOE		
GUIDE SHOE		
CENTRALIZERS		
BOTTOM PLUG		
TOP PLUG		
HEAD		
PACKER		
OTHER		

MATERIALS

TREAT. FLUID _____ DENSITY _____ LB/GAL. API
DISPL. FLUID _____ DENSITY _____ LB/GAL. API
PROP. TYPE _____ SIZE _____ LB.
PROP. TYPE _____ SIZE _____ LB.
ACID TYPE _____ GAL. %
ACID TYPE _____ GAL. %
ACID TYPE _____ GAL. %
SURFACTANT TYPE _____ GAL. IN
NE AGENT TYPE _____ GAL. IN
FLUID LOSS ADD. TYPE _____ GAL.-LB. IN
GELLING AGENT TYPE _____ GAL.-LB. IN
FRIC. RED. AGENT TYPE _____ GAL.-LB. IN
BREAKER TYPE _____ GAL.-LB. IN
BLOCKING AGENT TYPE _____ GAL.-LB.
PERFPAC BALLS TYPE _____ QTY.
OTHER _____
OTHER _____

JOB DATA

CALLLED OUT	ON LOCATION	JOB STARTED	JOB COMPLETED
DATE 7-11	DATE 7-11	DATE 7-11	DATE 7-12
TIME 0600	TIME 0930	TIME 1000	TIME 0900

PERSONNEL AND SERVICE UNITS

NAME	UNIT NO. & TYPE	LOCATION
G. Schepelt	35703	Glendive
E. Bryhn	3740	11

DEPARTMENT CMT

DESCRIPTION OF JOB

Plux Mud Kill well

JOB DONE THRU: TUBING ☐ CASING ☐ ANNULUS ☐ TBG./ANN. ☒

CUSTOMER REPRESENTATIVE X Donald Hodgson

HALLIBURTON OPERATOR Garret Schepelt COPIES REQUESTED _____

CEMENT DATA

STAGE	NUMBER OF SACKS	API CLASS	BRAND	BULK SACKED	ADDITIVES	YIELD CU.FT./SK.	MIXED LBS./GAL.
	150	<u>premium</u>	<u>B</u>	<u>.82 H₂O</u>	<u>4-9</u>	1.15	15.8

PRESSURES IN PSI

SUMMARY

VOLUMES

CIRCULATING _____ DISPLACEMENT _____
BREAKDOWN _____ MAXIMUM _____
AVERAGE _____ FRACTURE GRADIENT _____
SHUT-IN: INSTANT _____ 5-MIN. _____ 15-MIN. _____

HYDRAULIC HORSEPOWER

ORDERED _____ AVAILABLE _____ USED _____
AVERAGE RATES IN BPM _____

TREATING _____ DISPL. _____ OVERALL _____
CEMENT LEFT IN PIPE _____

FEET _____ REASON _____

FRESH: SBL-GAL. 10 TYPE Fresh
LOAD & BKON: SBL-GAL. _____ PAD: SBL-GAL. _____
TREATMENT: SBL-GAL. _____ DISPL: SBL-GAL. 23.5
CEMENT SLURRY: SBL-GAL. 15.4, 15.4
TOTAL VOLUME: SBL-GAL. 13.7

REMARKS

See Job Log.

CUSTOMER

Legal Description

GEARHART INDUSTRIES, INC.

WIRELINE SERVICES

P.O. Box 1258 / Fort Worth, Texas 76101

ID #

Job Ticket

388285

Invoice #

982132

Cust. Order #

Date of service

7-13-88

Schedule zone

III

District

WLSYN

R&S Code

29.056

Bill to:

Murphy Oil U.S.A. INC

Address:

City

State

Zip

Lease and Well No.

EPU #101

Field

East Poplar

County

Rocky Mt

Job No.

6079

State

Mont

TO GEARHART INDUSTRIES, INC.

You are hereby requested to furnish the service and materials and equipment herein set forth. Unless there is presently in effect a master or other specific or general contract intended to extend and apply to such service, materials and equipment (in which case such master, specific or general contract shall apply in accordance with its terms), these will be supplied in accordance with your General Terms and Conditions as set out on the back of this form. It is understood that certain of these, including (but not limited to) Chemical Cutters and Radioactive Materials, are potentially dangerous to persons, animals and property and accordingly the said General Terms and Conditions contain certain DISCLAIMERS OF LIABILITY AND INDEMNITIES. It is expressly accepted and agreed that (unless there is in effect a master or other specific or general contract as aforesaid) the said General Terms and Conditions shall supersede and replace any and all terms of any other contract or arrangement which may otherwise apply or be deemed to apply to the furnishing of the service, materials and equipment to the extent that any such term modifies, conflicts with, contradicts or is added to any term of this form or the said General Terms and Conditions.

Murphy

x Gerald H. Hogue

Name of Customer

Signature of Customer or Authorized Agent (also required on reverse)

INSTRUMENT PROTECTION: ☒ NOT OFFERED ☐ Accepted ☐ Not Accepted: Signature of Customer/Agent: X

Service Code	Description	S/N	Depth or Quantity	Rate	Amount	Well Data	
000-001	Service Charge				475.00	Perm. Datum	Elev.
	Pressure Equipment				250.00	Log from:	to:
						Depth: Driller	Logger
						Size: Casing	@ Bit
						Borehole fluid: Type	pH
						Density	Viscosity
						Fluid loss	Sample source
						BHT	Rm @ temp
						RMF @ temp	Rmc @ temp
						Other:	
	Perforate with 1 1/16 E Jet 4 shots Per PT					Report/rel. Date: 7-13	Time: 1200 ET
	5846-5851					Arrive Loc. Date: 7-13	Time: 1330
	21 Holes total		5000 6000	1-10	1250.00	Rig-up Date: 7-13	Time: 1600
			11	33.00	363.00	Oper: Per	Begin: 1600
					2338.00	Run #: 1	Date: 7-13 End: 1700
						Oper:	Begin:
						Run #: Date:	End:
	Less 15% Discount				- 350.70	Oper:	Begin:
					1987.30	Run #: Date:	End:
						Oper:	Begin:
						Run #: Date:	End:
	Instrument Protection:					Oper:	Begin:
	List Third Party/Other Charges Below					Run #: Date:	End:
						Oper:	Begin:
						Run #: Date:	End:
						Oper:	Begin:
						Run #: Date:	End:
	Est Field total				1987.30	Oper:	Begin:
						Run #: Date:	End:

Received by customer: Field prints () Film ()
Tape () Other ()

Signature of Customer/Agent: X

Third Party Charges:

Review

Invoice #'s

Cr

Remarks:

Pr

Dt

Oper: Begin: Run #: Date: End: Rig down: Date: 7-13 Time: 1715 Depart: Date: 7-13 Time: 1730 Shop/Loc: Date: Time: Oper: Begin: Run #: Date: End:

Gearhart Engineer:

I Acknowledge Completion of the Foregoing Job.

X

FORM 1908 R-11

WELL NO. - FARM OR LEASE NAME East Polar Unit 101		COUNTY Roosevelt	STATE Mt	CITY / OFFSHORE LOCATION	DATE 5-79-89
CHARGE TO Murphy Equip. USA, INC.		OWNER		TICKET TYPE (CHECK ONE) SERVICE <input checked="" type="checkbox"/> SALES <input type="checkbox"/>	NITROGEN JOB YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
ADDRESS		CONTRACTOR H + H		1 LOCATION W. 11. 17. 1	CODE 5586
CITY, STATE, ZIP		SHIPPED VIA Completed	FREIGHT CHARGES <input type="checkbox"/> PPD <input type="checkbox"/> COLLECT	2 LOCATION	CODE
WELL TYPE U1	WELL CATEGORY 62	WELL PERMIT NO.	DELIVERED TO Loc.	3 LOCATION	CODE
TYPE AND PURPOSE OF JOB Acid 145		B-	ORDER NO.	REFERRAL LOCATION	

As consideration, the above-named Customer agrees to pay Halliburton in accord with the terms and terms stated in Halliburton's current price lists. Invoices payable MET by the 20th of the following month after date of invoice. Upon completion in present of Customer's obligation by the last day of the month following the invoice date, the invoice shall be paid in full. In the event of a default in the payment of the invoice, the highest and most favorable contract rate applicable, but never to exceed 18% per annum, in the event it becomes necessary to employ an attorney to enforce collection of said account. Customer agrees to pay all collection costs and attorney fees in the amount of 20% of the amount of the unpaid account. These terms and conditions shall be governed by the law of the state where services are performed or equipment or materials are furnished.

Halliburton warrants only title to the products, supplies and materials and that the same are free from defects in workmanship and materials. THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE WHICH EXTEND BEYOND THOSE STATED IN THE IMMEDIATELY PRECEDING SENTENCE. Halliburton's liability and customer's exclusive remedy in any cause of action (whether in contract, tort, product liability, breach of warranty or otherwise) arising out of the sale or use of any products, supplies or materials is expressly limited to the replacement of such products, supplies or materials on their return to Halliburton or, at Halliburton's option, to the allowance to the customer of credit for the cost of such items. In no event shall Halliburton be liable for special, incidental, indirect, punitive or consequential damages.

[illegible]

AS PER ATTACHED BULK MATERIAL DELIVERY TICKET NO.

B-

08 SATISFACTORILY COMPLETED?

PERATION OF EQUIPMENT SATISFACTORY?

PERFORMANCE OF PERSONNEL SATISFACTORY?

Gerald R. Hudson
CUSTOMER OR HIS AGENT (PLEASE PRINT)

CUSTOMER OR HIS AGENT (SIGNATURE)

WE CERTIFY THAT THE FAIR LABOR STANDARDS ACT OF 1938, AS AMENDED HAS BEEN COMPLIED WITH IN THE PRODUCTION OF GOODS AND OR WITH RESPECT TO SERVICES FURNISHED UNDER THIS CONTRACT.

**HALLIBURTON
APPROVA!**

CUSTOMER

**SUB
TOTAL**

APPLICABLE TAXES WILL
BE ADDED ON INVOICE.

JOB LOG

WELL NO.

101 LEASE East P. 112 U. 11

TICKET NO.

126353

TOWER

Mileage cap

PAGE NO.

1

JOB TYPE

Acid

DATE

5-19-84

FORM 2013 R-2

CHART NO.	TIME	RATE (BPM)	VOLUME (DBL / GAC)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	6:40							Oil Log
	7:37							Test 1.25-2800
A	7:39							Fin. HALL. w/ notice
B	7:54		1550					Hall. Fin.
1	8:50		0			100		Start Acid to spit
2		1.7	250			210		Start Fin.
3	9:05	1.0	920					Acid spotted
								Set PXR - pressure up available to
4	9:36					0	380	Start 1st fin. interval - slowly
5	9:50	.6	1220			350	110	End Job
								ISIP - 260
								5 - 250
								10 - 250
								15 - 250
								Pressure - 780
								Return - 6
								Min - 350
								Max - 4
								Avg - 500
								Avg - 5
								Total Loss - 1220 gals
								29 BBL
								Initial Acid RABDOWN - 750-700 psi

CUSTOMER

BILLED ON
TICKET NO. 726353

FORM #2012 4-2

	NEW USED	WEIGHT	SIZE	FROM	TO	MAXIMUM PSI ALLOWABLE
CASING		45.5	5.5	10	5822	
LINE						
TUBING			2.375		5827	
OPEN HOLE						SHOTS/FT.
PERFORATIONS				5846	5851	
PERFORATIONS						
PERFORATIONS						

JOB DATA

CALLER OUT	ON LOCATION	JOB STARTED	JOB COMPLETED
DATE 5-19-89	DATE 5-19-89	DATE 5-19-89	DATE 5-19-89
TIME 3:50 -	TIME 6:40 -	TIME 7:59 -	TIME 9:50 -

PERSONNEL AND SERVICE UNITS

[illegible]

Acid Type HCl % 15 Gal.-Bbl. 25
Acid Type _____ % _____ Gal.-Bbl. _____
Surfactant Type _____ Gal. _____ @ _____ /1000 Gal.
Surfactant Type PJ-88 Gal. 3 @ 10 /1000 Gal.
NE Agent Type _____ Gal. _____ @ _____ /1000 Gal.
Clay Control Type _____ Gal.-Lb. _____ @ _____ /1000 Gal.
Corrosion Inhibitor HA-85 Gal.-Lb. 1 @ _____ /1000 Gal.
Corrosion Inhibitor _____ Gal.-Lb. _____ @ _____ /1000 Gal.
Cracking Inhibitor _____ Gal.-Lb. _____ @ _____ /1000 Gal.
Iron Sequester Ferrihex A Gal.-Lb. 10 @ _____ /1000 Gal.
Friction Reducer _____ Gal.-Lb. _____ @ _____ /1000 Gal.

DEPARTMENT St.**DESCRIPTION OF JOB**

JOB DONE THRU: TUBING ☒ CASING ☐ ANNULUS ☐ TSG./ANN. ☐

SUMMARY

Circulating _____ Displacement _____
Breakdown 750 - 700 Maximum 780
Average 5.50 Fracture Gradient _____
ISIP 260 5 Min. 250 10 Min. 250 15 Min. 250

HYDRAULIC HORSEPOWER

Ordered _____ Available _____ Used _____
AVERAGE RATE IN BPM
 Training 6 Displ. 4 Overall 5

CUSTOMER

Preflush: Bbl.-Gal. _____ Type _____
Load & Bkdn: Bbl.-Gal. _____ Pad: Scf-Bbl.-Gal. _____
Treatment: Bbl.-Gal. 250 Displ: Bbl.-Gal. 970
Gas Assist _____ Tons-Scf _____ @ _____ Scf./Bbl.
Foam Quality _____ % Total Volume Foam _____ Bbl.-Gal.
Total Volume: Bbl.-Gal. 1120 Fluid-Foam _____

REMARKS

SEE JOB Log

Halliburton
Operator Jason Tassid

WORK ORDER CONTRACT
AND PRE-TREATMENT DATAATTACH TO:
INVOICE & TICKET NO.

726353

DISTRICT W. H. H. NO.DATE 5-19-87

TO: HALLIBURTON SERVICES YOU ARE HEREBY REQUESTED TO FURNISH EQUIPMENT AND SERVICEMEN TO DELIVER AND OPERATE

THE SAME AS AN INDEPENDENT CONTRACTOR TO:

AND DELIVER AND SELL PRODUCTS, SUPPLIES, AND MATERIALS FOR THE PURPOSE OF SERVING (CUSTOMER)

WELL NO. 101 LEASE East Poplar Unit SEC. 14 TWP. 28N RANGE 51EFIELD Shedda COUNTY MI STATE MI OWNED BY

THE FOLLOWING INFORMATION WAS FURNISHED BY THE CUSTOMER OR HIS AGENT

FORMATION NAME C-3 TYPE

FORMATION THICKNESS FROM TO

PACKER: TYPE Baker (ADH) SET AT 5827

TOTAL DEPTH MUD WEIGHT

BORE HOLE

INITIAL PROD: OIL BPD, H₂O BPD, GAS MCFPRESENT PROD: OIL BPD, H₂O BPD, GAS MCF

	NEW USED	WEIGHT	SIZE	FROM	TO	MAX. ALLOW. P.S.I.
CASING		15.5	5.5	TD	5872	
LINER						
TUBING			2.375		5827	
OPEN HOLE						SHOTS/FT.
PERFORATIONS				5846	5851	
PERFORATIONS						
PERFORATIONS						

PREVIOUS TREATMENT: DATE TYPE MATERIALS

TREATMENT INSTRUCTIONS: TREAT THRU TUBING ☒ ANNULUS ☐ CASING ☐ TUBING/ANNULUS ☐ HYDRAULIC HORSEPOWER ORDEREDSLOW RATE w/ 250 gal 152 AGO

CUSTOMER OR HIS AGENT WARRANTS THE WELL IS IN PROPER CONDITION TO RECEIVE THE PRODUCTS, SUPPLIES, MATERIALS, AND SERVICES

As consideration, the above-named Customer agrees:

THIS CONTRACT MUST BE SIGNED BEFORE WORK IS COMMENCED

- To pay Halliburton in accord with the rates and terms stated in Halliburton's current price lists.
- Halliburton shall not be responsible for and Customer shall secure Halliburton against any liability for damage to property of Customer and of the well owner (if different from Customer), unless caused by the willful misconduct or gross negligence of Halliburton, this provision applying to but not limited to subsurface damage and surface damage arising from subsurface damage.
- Customer shall be responsible for and secure Halliburton against any liability for reservoir loss or damage, or property damage resulting from subsurface pressure, losing control of the well and/or a well blowout, unless such loss or damage is caused by the willful misconduct or gross negligence of Halliburton.
- Customer shall be responsible for and secure Halliburton against any and all liability of whatsoever nature for damages as a result of subsurface trespass, or an action in the nature thereof, arising from a service operation performed by Halliburton hereunder.
- Customer shall be responsible for and secure Halliburton against any liability for injury to or death of persons, other than employees of Halliburton, or damage to property (including, but not limited to, injury to the well), or any damages whatsoever, irrespective of cause, growing out of or in any way connected with the use of radioactive material in the well hole, unless such damage shall be caused by the willful misconduct or gross negligence of Halliburton.
- Halliburton makes no guarantee of the effectiveness of the products, supplies or materials, nor of the results of any treatment or service.
- To the extent permitted by law, waives the provisions of the Deceptive Trade Practices - Consumer Protection Act.
- Customer shall, at its risk and expense, attempt to recover any Halliburton equipment, tools or instruments which are lost in the well and if such equipment, tools or instruments are not recovered, Customer shall pay Halliburton its replacement cost unless such loss is due to the sole negligence of Halliburton. If Halliburton equipment, tools or instruments are damaged in the well, Customer shall pay Halliburton the lesser of its replacement cost or the cost of repairs unless such damage is caused by the sole negligence of Halliburton. In the case of equipment, tools or instruments for marine operations, Customer shall, in addition to the foregoing, be fully responsible for loss of or damage to any of Halliburton's equipment, tools or instruments which occurs at any time after delivery to Customer at the landing, until returned to the landing, unless such loss or damage is caused by the sole negligence of Halliburton.
- Because of the uncertainty of variable well conditions and the necessity of relying on facts and supporting services furnished by others, Halliburton is unable to guarantee the accuracy of any chart interpretation, research analysis, job recommendation or other data furnished by Halliburton. Halliburton personnel will use their best efforts in gathering such information and their best judgment in interpreting it, but Customer agrees that Halliburton shall not be responsible for any damages arising from the use of such information except where due to Halliburton's gross negligence or willful misconduct in the preparation or furnishing of it.
- Halliburton warrants only title to the products, supplies and materials and that the same are free from defects in workmanship and materials. THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE WHICH EXTEND BEYOND THOSE STATED IN THE IMMEDIATELY PRECEDING SENTENCE. Halliburton's liability and Customer's exclusive remedy in any cause of action (whether in contract, tort, breach of warranty or otherwise) arising out of the sale or use of any products, supplies or materials is expressly limited to the replacement of such products, supplies or materials on their return to Halliburton or, at Halliburton's option, to the allowance to the Customer of credit for the cost of such items. In no event shall Halliburton be liable for special, incidental, indirect, punitive or consequential damages.
- Invoices payable NET by the 20th of the following month after date of invoice. Upon Customer's default in payment of Customer's account by the last day of the month following the month in which the invoice is dated, Customer agrees to pay interest thereon after default at the highest lawful contract rate applicable but never to exceed 18% per annum. In the event it becomes necessary to employ an attorney to enforce collection of said account, Customer agrees to pay all collection costs and attorney fees in the amount of 20% of the amount of the unpaid account.
- This contract shall be governed by the law of the state where services are performed or equipment or materials are furnished.
- Halliburton shall not be bound by any changes or modifications in this contract, except where such change or modification is made in writing by a duly authorized executive officer of Halliburton.

I HAVE READ AND UNDERSTAND THIS CONTRACT AND REPRESENT
THAT I AM AUTHORIZED TO SIGN THE SAME AS CUSTOMER'S AGENT.

SIGNED

DATE

TIME

A.M. P.M.

We certify that the Fair Labor Standards Act of 1938, as amended, has been complied with in the production of goods and/or with respect to services furnished under this contract.

CUSTOMER

HALLIBURTON SERVICES JOB LOG

WELL NO. 101 LEASE East P. IAR V.17 TICKET NO. 726353
 FORMER M. Japhy CRAP. PAGE NO. 1
 JOB TYPE ACIO DATE 5-19-89

FORM 2013 R-2

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	6:40							ON LOC.
	7:37							Test 1.025- 2800
A	7:39							Fill HOLE w/ water
B	7:54		1550					HOLE FULL
1	8:50		0			100	0	START ACIO to spot
2		1.7	250			210	0	START FLUSH
3	9:05	1.0	920				0	ACIO spotted
								set PKR - pressure up available to ps:
4	9:36					0	380	START illb formation - slowly
5	9:50	.6	1220			350	110	END JOB
								ISIP - 260
								5- 250
								10- 250
								15- 250
								Pos max - 780 Rate max - .6
								Min - 350 Min - .4
								Avg - 500 Avg - .5
								Total LOAD - 1220 gals
								29 BBL
								Initial ACIO BOLDWIN - 750 - 700 psi

HALLIBURTON ENERGY SERVICES

ACQUIRE Version 2.13

CUSTOMER AND JOB INFORMATION

Customer	Murphy Oil	Date	06-Aug-1997
Contractor	H&H	County	Roosevelt
Lease	EPU	Town	28N
Location	NE Poplar	Section	14
Formation	Heath	Range	51W
Job Type	Boragel Frac	Permit No	
Country	USA	Well No	101
State	Mt.	Field Name	EPU

Customer Representative Ray Reade

Halliburton Operator Fabian Kjorstad

Ticket No. 02207

STAGE DESCRIPTIONS

Prepad with friction test
ISIP - Minifrac Analysis
PAD 4000 GAL
1-8# Sand Ramp 8050 gals
Flush
ISIP

WELL CONFIGURATION INFORMATION

Packer Type	Depth	4885 ft
Bottom Hole Temp.	150.0	Deg F

PIPE CONFIGURATION

Wellbore	Measured		Casing	Casing	Tubing	Tubing
Segment	Depth	TVD	ID	OD	ID	OD
Number	(ft)	(ft)	(inch)	(inch)	(inch)	(inch)
1	4885	4885	4.950	5.500	2.441	2.875
2	4948	4948	4.950	5.500	0.000	0.000

PERFORATIONS

Perforation	Top	Bottom	Shots per
Interval	(ft)	(ft)	(ft)
1	4948	4970	2

REMARKS ABOUT JOB

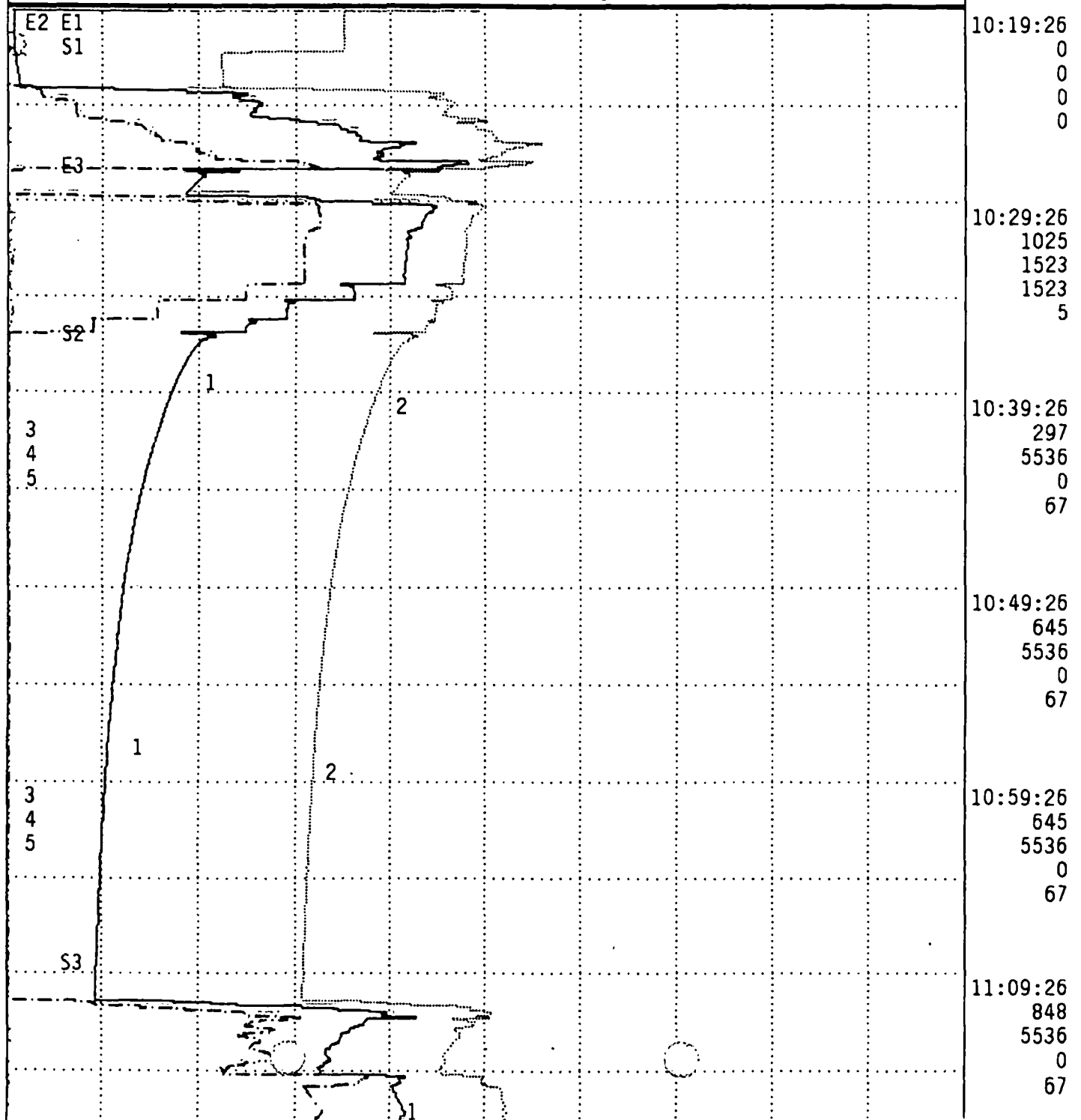
Thank You for using Halliburton Energy Services!

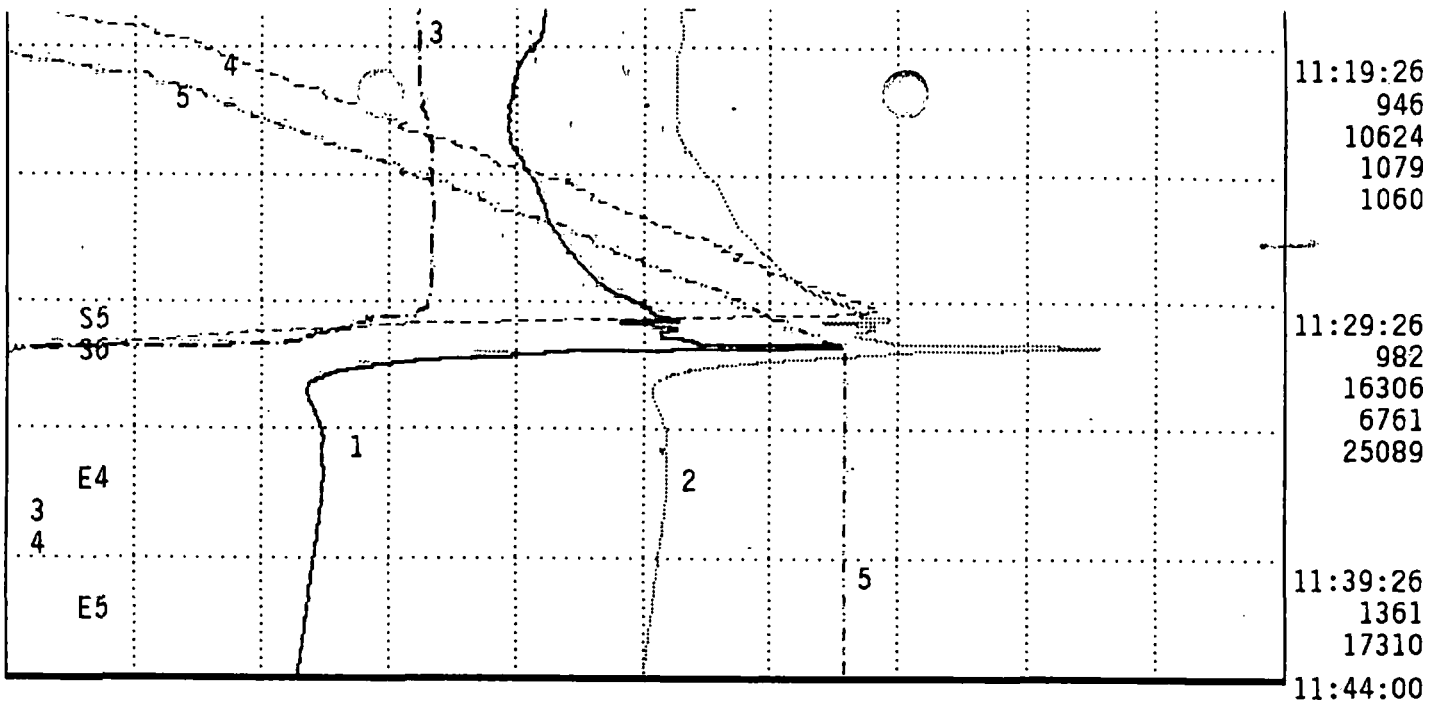
NOTICE: THIS REPORT IS BASED ON SOUND ENGINEERING PRACTICES, BUT BECAUSE OF VARIABLE WELL CONDITIONS AND OTHER INFORMATION WHICH MUST BE RELIED UPON, HALLIBURTON MAKES NO WARRANTY, EXPRESSED OR IMPLIED, AS TO THE ACCURACY OF THE DATA OR OF ANY CALCULATIONS OR OPINIONS EXPRESSED HEREIN. YOU AGREE THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER DUE TO NEGLIGENCE OR OTHERWISE ARISING OUT OF OR IN CONNECTION WITH SUCH DATA, CALCULATIONS OR OPINIONS.

 PLAYBACK STRIP CHART
 #####

- | | | |
|------------------|-------|-------------|
| 1. Annulus Press | (psi) | Max for Stg |
| 2. Clean Volume | (gal) | |
| 3. Stage Volume | (gal) | |
| 4. Sand Volume | (lb) | |

0	_____	1	TUBING PRESS	psi	_____	10000
0	_____	2	BHP(CALC)	psi	_____	10000
0.00	-----	3	SLURRY RATE	bpm	-----	50.00
0.00	-----	4	PROP CONC/SLURRY	lb/gal	-----	10.00
0.00	-----	5	PROP CONC/BOTTOM	lb/gal	-----	10.00





Customer: Murphy Oil
Well Desc: EPU 101
Formation: Heath

Date: 06-Aug-1997
Ticket #: 02207
Job Type: Boragel Frac

JOB SUMMARY

JOB START TIME: 10:19:26
JOB END TIME: 11:44:00
JOB DURATION: 01:24:34

STAGES AND EVENTS:

Chart	Time	Slurry Rate (bpm)	Clean Stage Volume (gal)	Tubing Press. (psi)	Remark
Event #1	10:19:26	0.00	0	0	Start Job
Event #2	10:19:37	0.00	0	65	Safety Meeting
Stage #1	10:21:32	0.19	5536	67	prepad with isip
Event #3	10:27:49	0.16	0	2695	ISIP Tubing Press 2695 (psi)
Stage #2	10:36:25	0.03	0	2120	MINI FRAC TEST
Stage #3	11:08:25	0.00	4009	946	4000 GAL PAD
Stage #4	11:17:49	16.15	6950	4190	1-8# ramp 8050 Gal
Stage #5	11:29:48	16.07	816	5072	Start Flush
Stage #6	11:31:20	0.00	0	4416	ISIP Tubing Press 4416 (psi)
Event #4	11:36:22	0.00	0	2476	5 Min Shutin Pres. Tubing Press 2476 (psi)
Event #5	11:41:21	0.00	0	2352	10 Min Shutin Pres. Tubing Press 2352 (psi)
Event #6	11:44:00	0.00	0	2277	End Job

Customer: Murphy Oil
Well Desc: EPU 101
Formation: Heath

Date: 06-Aug-1997
Ticket #: 0220
Job Type: Boragel Frac

STAGE SUMMARY

Stage Times

Stage	Start Time	End Time	Elapsed Time
1	10:21:32	10:36:25	00:14:53
2	10:36:25	11:08:25	00:32:00
3	11:08:25	11:17:49	00:09:24
4	11:17:49	11:29:48	00:11:59
5	11:29:48	11:31:20	00:01:32
6	11:31:20	11:44:00	00:12:40
Total	10:21:32	11:44:00	01:22:28

AVERAGES OR VOLUMES PER STAGE -- Planned Volume vs. Actual Volume

Stage	Planned CI Volume (gal)	Clean Volume (gal)
1	6200	5536
2	0	0
3	4000	4009
4	8050	6950
5	1249	816
6	0	0
Tot/Avg	19499	17310

AVERAGES OR VOLUMES PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	BHP (Calc) Pressure (psi)	Slurry Rate (bpm)	Prop Conc Slurry* (lb/gal)	Prop Conc Bottom* (lb/gal)
1	2972	4369	8.59	0.06	0.02
2	1246	3386	0.03	0.00	0.02
3	3029	4437	10.55	0.02	0.00
4	4220	5600	16.48	3.83	2.86
5	5311	7021	11.26	2.98	6.23
6	2461	5171	0.00	0.09	6.58
Tot/Avg	2455	4347	10.53	1.88	1.67

*Average based on volume.

Customer: Murphy Oil
Well Desc: EPU 101
Formation: Heath

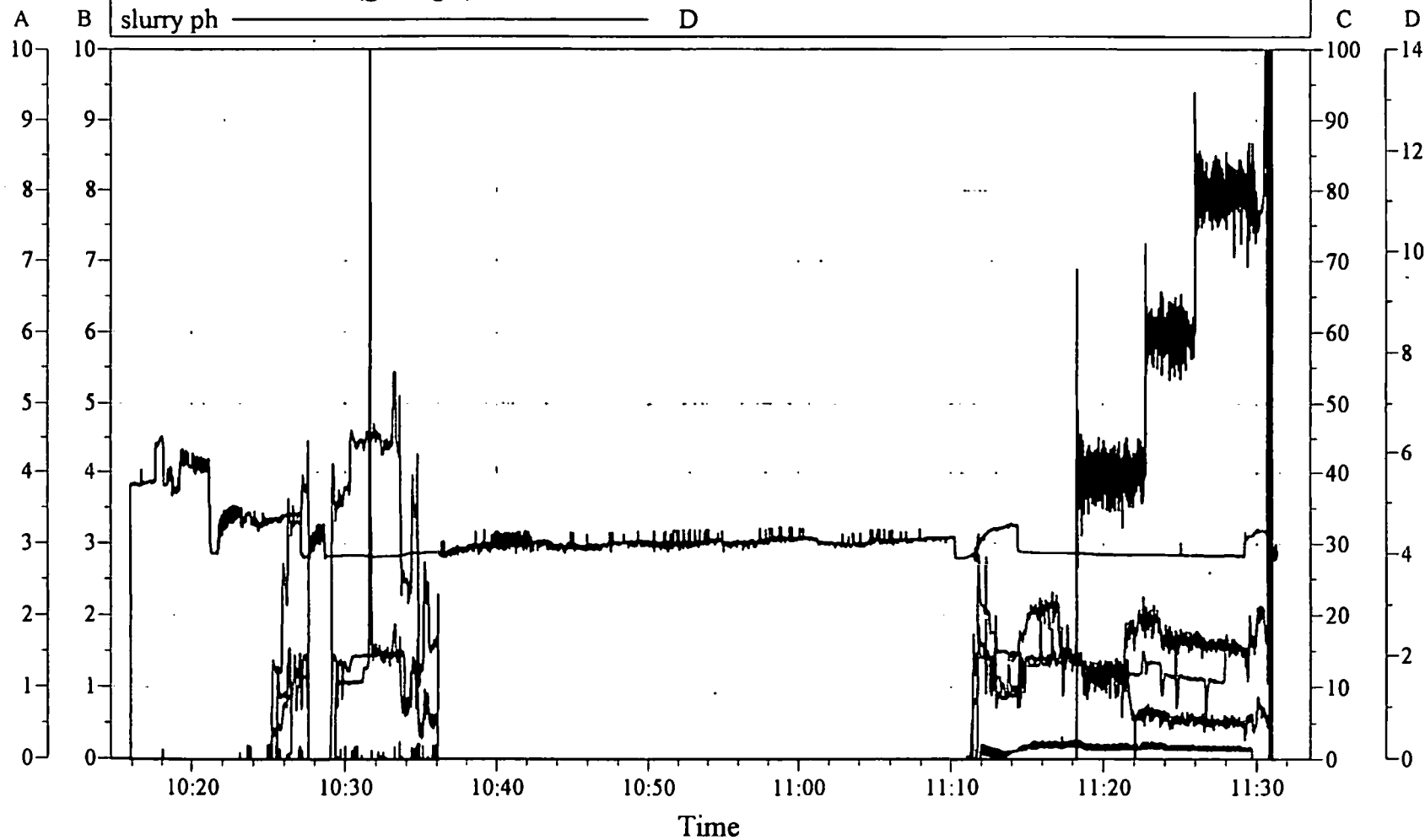
Date: 06-Aug-1997
Ticket #: 02207
Job Type: Boragel Frac

STAGE SUMMARY

MAXIMUM VALUE PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	BHP (Calc) Pressure (psi)	Slurry Rate (bpm)	Prop Conc Slurry* (lb/gal)	Prop Conc Bottom* (lb/gal)
1	4852	5638	16.24	0.19	0.07
2	2140	4280	0.03	0.00	0.02
3	4417	5275	19.30	0.05	0.03
4	5059	6715	16.74	6.85	6.00
5	7278	8879	16.07	6.62	6.58
6	4416	7128	0.03	0.09	6.58
Max Job	7278	8879	19.30	6.85	6.58

Opti flo III (lb/Mgal) —————	A	cl-31 (gal/Mgal) —————	B
losurf 259 (gal/Mgal) —————	B	clafix II (gal/Mgal) —————	B
Clasta XP (gal/Mgal) —————	B		
slurry ph —————	D		

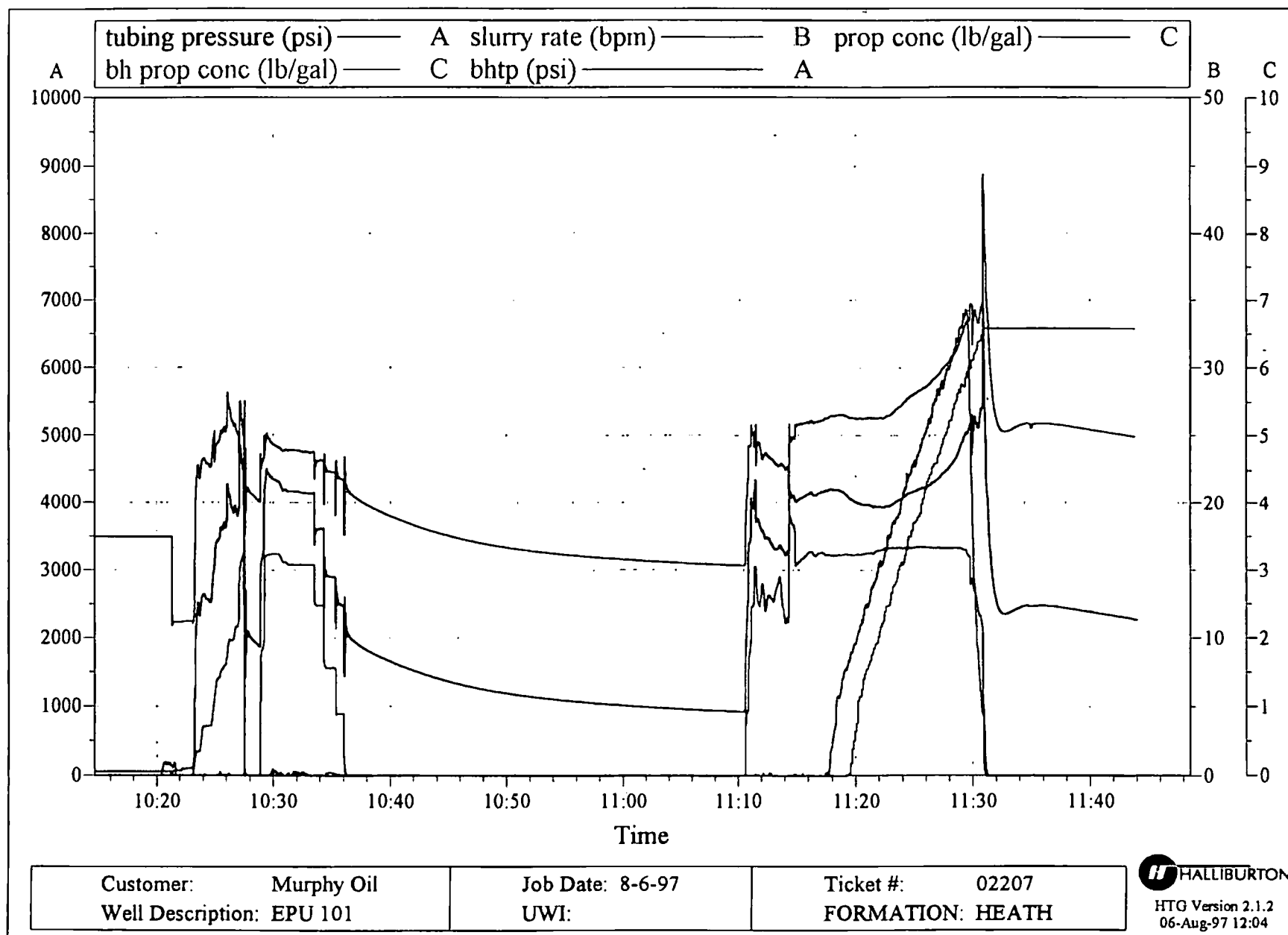


Customer: MURPHY OIL
Well Description: EPU 101

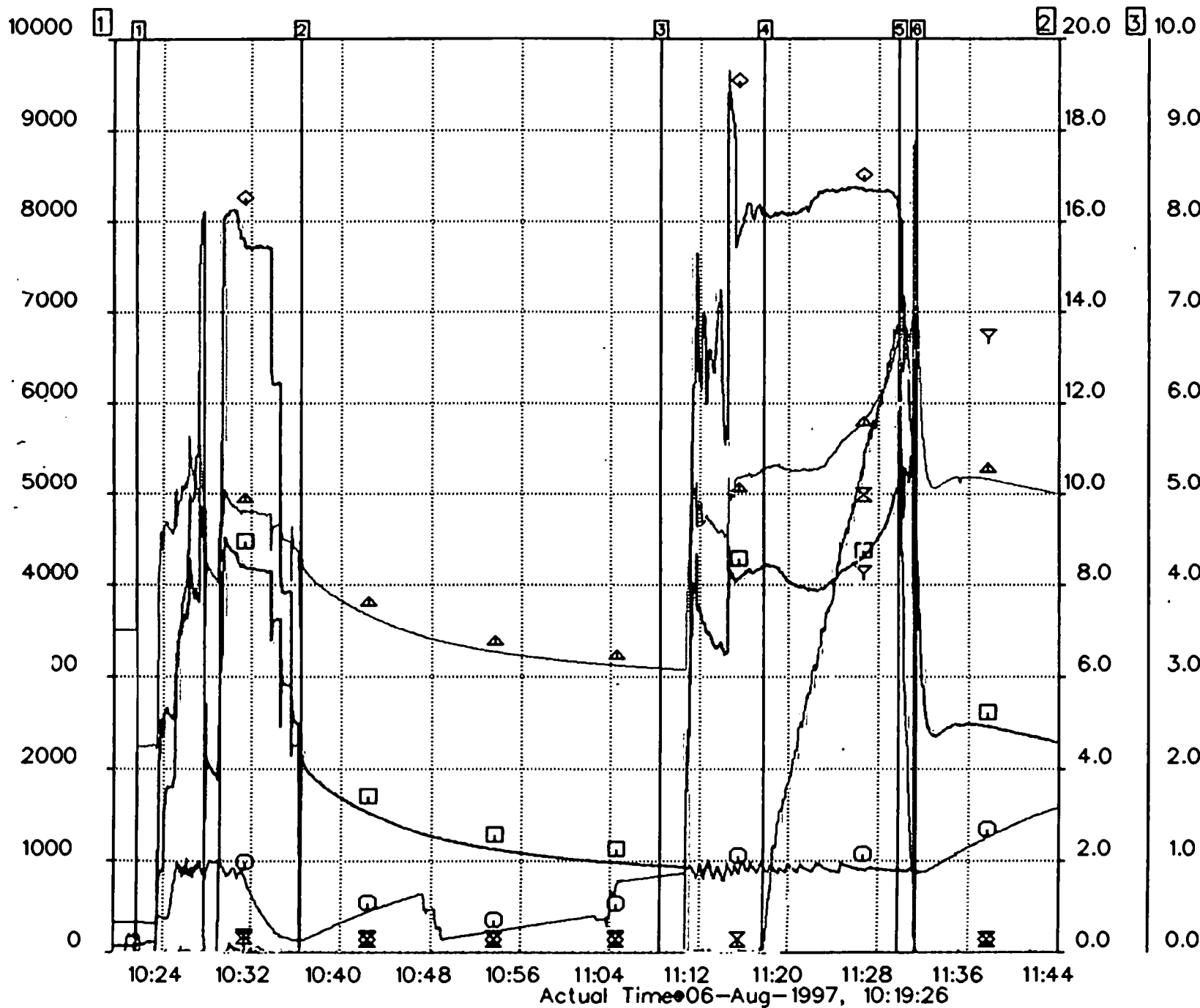
Job Date: 8-6-97
UWI:

Ticket #: 02207
FORMATION: HEATH

HALLIBURTON
HTG Version 2.1.2
06-Aug-97 12:12



<input type="checkbox"/> Tubing Press (psi)	<input type="checkbox"/> Annulus Press (psi)	<input type="checkbox"/> Δ BHP(Calc) (psi)
<input type="checkbox"/> Slurry Rate (bpm)	<input type="checkbox"/> Prop Conc/Slurry (lb/gal)	



Halliburton Energy Services ACQUIRE Version 2.13 06-Aug-1997 Ticket: 02207

Customer: Lease: Well Number: Hallib. Oper:
 Formation: Job Type: Customer Rep:
 Contractor: Location: , , ,

FIELD TICKET
HALLIBURTON
ENERGY SERVICES

OPERATOR: FABIAN KJORSTAD

JOB ID: 00292010220

CUSTOMER	ST	COUNTY	LEASE	WELL NO.
MURPHY OIL USA, INC.	MT	ROOSEVELT	EPU	101

L	Price Ref.	Description	Quantity	U/M	Unit Price
		510-198 SAND 20/40 WHITE BUL	30200.00 LB		9.85 2974.70
				PER 100 LB	

SUBTOTAL: 40369.65

Applicable taxes will be added

**FIELD TICKET
HALLIBURTON
ENERGY SERVICES**

OPERATOR: FABIAN KJORSTAD

JOB ID: 00292010220

Well No-Farm or Lease	County	State	Date
101 EPU	ROOSEVELT	MT	08-0
Charge To	Owner		
MURPHY OIL USA, INC.	MURPHY		
Address	Service Centers	Shipped Via	Mileage
BOX 547	WILLISTON	CO TRUCK	85
POPLAR, MT 59255			
Well Type	Well Category	Field	
001 OIL	001 DEVELOPMENT	E. POPLAR	
Job Purpose	Section	Township	Range
BORAGEL	14	28N	51E

L	Price Ref.	Description	Quantity	U/M	Unit Price	
	300-111	MILEAGE FOR STIMULATION EQUIP	170.00	MI	3.20	3264.00
			6.00	UNT		
	300-112	MILEAGE FOR STIMULATION CREW	170.00	MI	1.95	331.50
			1.00	UNT		
	300-132	DELIVERY CHARGE BODY LOAD UNIT	170.00	MI	2.55	433.50
			1.00	UNT		
	301-002	PUMP CHARGES - HHP	4200.00	PSI	6.18	10178.46
			1647.00	HHP		
	301-200	PROPORTIONER	10.00	BPM	2235.00	2235.00
			1.00	EA		
	307-785	FRACVAN II	1.00	JOB	1900.00	1900.00
	307-964	FRACPRO ON-SITE REAL TIME ANLS	1.00	EA	1890.00	1890.00
	307-802	RADIOACTIVE DENSOMETER	1.00	JOB	586.00	586.00
	307-574	GROUND MANIFOLD	1.00	JOB	471.00	471.00
			1.00	EA		
	307-009	FRACTURING VALVE 2-2.5	1.00	DAY	242.00	242.00
			1.00	EA		
	390-100	CASING POP-OFF VALVE	1.00	JOB	167.00	167.00
			1.00	EA		
	301-197	PROPPANT PUMP CHARGE	2.00	PPG	0.05	172.50
			3450.00	GAL		
	301-197	PROPPANT PUMP CHARGE	5.00	PPG	0.12	276.00
			2300.00	GAL		
	301-197	PROPPANT PUMP CHARGE	7.50	PPG	0.20	460.00
			2300.00	GAL		
	500-340	MILEAGE FOR BULK FRAC.MATERIAL	1488.00	TMI	1.18	1755.84
	310-106	WATERFRAC G	30.00	LB	8.50	1657.50
			6500.00	GAL	PER 1000 GAL	
	310-145	BORAGEL G	30.00	LB	9.00	2970.00
			11000.00	GAL	PER 1000 GAL	
	218-702	LOSURF-259	35.00	GAL	47.00	1645.00
	313-394	BE-5	6.00	LB	47.00	282.00
	311-050	SP BREAKER	5.00	LB	6.37	31.85
	314-186	CLA-STA XP	55.00	GAL	60.00	3300.00
	314-163	CLAYFIX II	45.00	GAL	31.00	1395.00
	311-081	OPTIFLO-III	50.00	LB	30.00	1500.00
	310-400	CAT-3	10.00	GAL	18.47	184.70
	314-100	MO-67	5.00	GAL	13.22	66.10

HALLIBURTON	Well No.	101	Lease	EPU	Job Id	002920102
ENERGY SERVICES	Customer	MURPHY OIL USA, INC.	Date	08-06-97		
JOB SUMMARY	Job Type	FRAC JOBS	Operator	FABIAN KJ		

Job Comments

MESSAGE

THANK YOU FOR USING HALLIBURTON ENERGY SERVICES

Well Configuration

PIPE	FROM	TO	SIZE	WEIGHT	MAX/PSI	NEW/USED
TUBING	4885	2.875	6.5	6500	U	

Well Perforation

FROM	TO	SHOTS	FORMATION	FORMATION TYPE
4948	4970	2	HEATH	SANDSTONE

Materials

CATEGORY	DESCRIPTION	QUANTITY	UNITS	CONCENTRATE	UNITS
	WATERFRAC G	30.000	LB		
	BORAGEL G	30.000	LB		
	LOSURF-259	35.000	GAL		
	BE-5	6.000	LB		
	SP BREAKER	5.000	LB		
	CLA-STA XP	55.000	GAL		
	CLAYFIX II	45.000	GAL		
	OPTIFLO-III	50.000	LB		
	CAT-3	10.000	GAL		
	MO-67	5.000	GAL		
	SAND 20/40 WHITE BUL	30200.000	LB		

Employees and Equipment

EMPLOYEE NAME	EMPL. ID	EQUIPMENT	UNIT NO.	LOCATION
ROBERT SCHREIBER	67985	PICKUP	040965	WILLISTON
ANDREW ANDERSON	69068	PICKUP	040965	WILLISTON
LARRY PARK	89421	PICKUP	038452	WILLISTON
KIP TRONES	C9165	IRON TRUCK 3. INCH	052425	WILLISTON
BRAD SIMONSON	D8626	QCC VAN	6058	WILLISTON
JEFFREY JACOBSON	D8953	BLENDER 100 BBL	75028Z	WILLISTON

101
HALIBURTON

Well No. 101 Lease HPU

Job Id 002920102

ENERGY SERVICES

Customer MURPHY OIL USA, INC.

Date 08-06-97

JOB SUMMARY

Job Type FRAC JOBS

Operator FABIAN KJ

Job Information

CONTRACTOR:

JOB PURPOSE: 08 FRAC JOBS

JOB DESCRIPTION: BORAGEL FRAC

PERFORMED THRU:

CALLED OUT: 08-06-97 4:30

ON LOCATION: 08-06-97 8:00

STARTED: 08-06-97 10:19

COMPLETED: 08-06-97 11:45

Well Information

OWNER NAME: MURPHY

WELL TYPE: 001 Oil

MUD TYPE:

BOT HOLE TEMP:

TOTAL DEPTH:

WELL CATEGORY: 001 Development

MUD WEIGHT:

BOT HOLE PSI:

PBTD:

Pressures in PSI

AVERAGE: 4200

BREAKDOWN: 4800

FLUSH: 5300

ISIP: 4416

10-MIN: 2352

MAXIMUM: 7278

FRAC GRADIENT: .62

5-MIN: 2476

15-MIN:

Volumes

PREPAD: 5540.00 GAL

LOAD & BKDN: 0.00 GAL

FLUSH: 820.00 GAL

PAD: 4010.00 GAL

GAS ASSIST: TON

FOAM QUALITY: %

TOTAL VOLUME: 17310.00 GAL

PREPAD TYPE:

TREATMENT: 10960.00 GAL

TYPE:

TOTAL VOL FOAM 0.00 GAL

AT: SC

Hydraulic Horsepower

ORDERED: 2000

AVAILABLE: 2000

USED: 1647

Average Rates in BPM

TREATING: 16

FLUSH: 12

OVERALL: 15

Schlumberger

Dowell

Stimulation Service Report

Well				Location (legal)				Dowell Location				Job Number					
EPU 101				SEC. 14-T28N-R51E				Williston, ND				20006696					
Field				Formation Name/Type				Deviation		BHSZ		Well MD		Well TVD			
East Poplar Unit				Heath/ sandstone				0 °		0 in		5,000 ft		0 ft			
County				State/Province				BHP		BHST		BHCT		Pore Pres Gradient			
Roosevelt				Montana				0 psi		165 °F		0 °F		0 psi/ft			
Rig Name		Drilled For		Service Via		Casing											
& H WELL SERVIC		Oil		Land													
Water Depth		Well Class		Well Type		Depth, ft		Size, in		Weight, lb/ft		Grade		Thread			
		201		Workover		5000		5.5		15.5							
						0		0		0							
Primary Treating Field				Polymer Loading		Fluid Density		Tubing									
15% HCL				0 lb/1000gal		lb/gal											
								Depth, ft		Size, in		Weight, lb/ft		Grade		Thread	
								4976		2.375		4.7		N80		N/A	
								0		0		0					
Service Line		Job Type		Perforated Intervals													
Matrix		Drilling Damage Removal															
Max. Allowed Taping Pressure		Max. Allowed Ann. Pressure		Wellhead Connection													
1730 psi		0 psi		2.38													
Service Instructions																	
750 gals 15% Hcl																	
38 gals U100 Solvent																	
2 gals A261																	
2 gals W54																	
15 gals U42																	
Job Scheduled For:		Arrived on Location:		Leave Location:		Tubing Vol.		Casing Vol.		Annular Vol.		Open Hole Vol.					
7/21/97 7:30		7/21/97 7:30		7/21/97 12:00		19.25 bbl		0 bbl		0.5 bbl		0 bbl					
Time 24 hr clock	Fluid Type	Prop Type	PPA	Rates		Volumes		Pressures		Message							
				Gas scfm	Fluid bpm	Incr. bbl	Decr. bbl	Casing psi	Tubing psi								
7:30			0	0	0	0	0	0	0	ARRIVE LOCATION, RIG UP							
9:11	SAW		0	0	0	0	0	0	0	PSI TEST LINES, 2900 psi							
9:14	15%		0	0	1.7	18	0	0	0	START 15% HCL							
9:19	"		0	0	0.6	0	9	0	630	CAUGHT PSI							
9:22	"		0	0	0	0	10	0	1260	SHUTDOWN, LEAK ON RIG MASTE							
9:23	15%		0	0	0.6	0	10	0	970	RESTART PUMP							
9:24	SAW		0	0	0.6	3	12	0	1730	START SAW, CLEAR LINES							
9:31	"		0	0	0	0	15	0	1520	SHUTDOWN							
9:44	"		0	0	0	0	15	0	230	BLEED OFF PSI TO 0							
9:45			0	0	0	0	0	0	0	TAKE OUT RIG VALVE							
9:51	15%		0	0	0.4	0	15	0	10	RESTART 15% HCL							
10:06	"		0	0	0.3	0	20	0	1610	ACID ON PERFS							
10:16	SAW		0	0	0.3	20	21	0	1610	START SAW FLUSH							
11:14	"		0	0	0.34	0	40	0	1540	FINAL RATE & PSI							
11:17	"		0	0	0	0	41	0	1450	SHUTDOWN-ISIP							
11:22			0	0	0	0	0	0	810	5 MIN.							
11:27			0	0	0	0	0	0	660	10 MIN.							
11:32			0	0	0	0	0	0	560	15 MIN.							
11:35			0	0	0	0	0	0	0	END JOB							

Well		Field		Service Date		Customer		Job Number		
EPU 101		East Poplar Unit		7/20/97		MURPHY OIL CORPORATION		20009696		
Time	Fluid Type	Prop Type	PPA	Rates		Volumes		Pressures		Message
24 hr clock				Gas	Fluid	Isoc.	Gem.	Casing	Tubing	
				scfm	bpm	bbl	bbl	psi	psi	
Post Job Summary										
Average Injection Rates, bpm				Volume of Fluid Injected, bbl						
Field	N2	CO2	Maximum Rate	Clean Field	Acid	Oil	N2	CO2		
0.3	0	0	0.3	0	0	0	0	0		
Treating Pressure Summary, psi				Quantity of placed, lb						
Breakdown	Maximum	Final	Average	ISIP	15 Min. ISIP	Total Injected	Total Ordered/Designed			
1730	1730	1540	1630	1460	560	0	0			
N2 Percent	CO2 Percent	Designed Fluid Volume		Displacement		Slurry Volume		Pad Volume		Percent Pad
0%	0%	0 bbl		0 bbl		0 bbl		0 gal		0 %
Customer or Authorized Representative			Dowell Supervisor			Number of Stages		Fracture Gradient		<input checked="" type="checkbox"/> Job Completed <input type="checkbox"/> Screen Out
RAY REEDY			Gary Quale			0		0 psi/ft		

Schlumberger

Dowell

Dowell, A Division of Schlumberger Technology Corp.
12 Twelfth Ave E
Williston, ND

Service Order Receipt

Job Number
20009696

Important- See other side for terms and conditions

Invoice Mailing Address:
MURPHY OIL CORPORATION

POPLAR, MT 59255
US

ARRIVE LOCATION	Date	Time
	7/21/97	7:30:00 AM
JOB COMPLETION	Date	Time
	7/21/97	11:52:27 AM

Service Instructions

750 gals 15% Hcl
38 gals U100 Solvent
2 gals A261
2 gals W54
15 gals U42
10 gals L58

Service Description

Matrix - Drilling Damage Removal

Customer PO	Contract	API	Rig
169594	0	0	H & H WELL SERVICE
Well	State/Province	County/Parish/Block	Legal Location
EPU 101	Montana	Roosevelt	SEC. 14-T28N-R51E
Field	Customer or Authorized Representative		
East Poplar Unit	RAY REEDY		

Material	Description	Quantity	Unit	Unit Price	Amount
Services					
59200002	Mileage, All Other Equipment	170	MI	\$3.15	\$535.50
102877025	Equip Charge 1st 4hr 2501- 5000 psi	1	EA	\$890.00	\$890.00
58041009	Transport, Acid 4hr Min Not Otherwise Ch	4	HR	\$90.00	\$360.00
28459000	Communication	3	JOB	\$30.00	\$90.00
59697000	PACR Treatment Analysis Recorder	1	JOB	\$179.00	\$179.00
Services Subtotal:					\$2,054.50

Products					
H015	Acid, Hydrochloric 15% H15	750	GA	\$2.20	\$1,650.00
U100	Solvent, Mutual U100	38	GA	\$26.72	\$1,015.36
A261	Inhibitor, Corrosion A261	2	GA	\$60.50	\$121.00
W054	Emulsifying Agent W54	2	GA	\$44.29	\$88.58
U042	Chelating Agent U42	15	GA	\$20.84	\$312.60
L058	Iron Stabilizer L58	8	LB	\$14.81	\$118.48
Products Subtotal:					\$3,306.02

Overall Subtotal: \$6,360.52
Less Discount: \$1,876.19
Estimated Total: \$3,484.33

The estimated charges above are subject to correction by Dowell.

Service Receipt: I certify that the materials and services listed were received and all services performed in a workmanlike manner

Signature of Customer or Authorized Representative

Signature of Dowell Representative

Gary Quale
Gary Quale

Thank you for Calling Dowell!

YAPUNCICH, SANDERSON & BROWN LABORATORIES

P. O. BOX 593

BILLINGS, MONTANA

13 N. 32ND ST.

WATER ANALYSIS REPORT

Lab. No. 1665-W

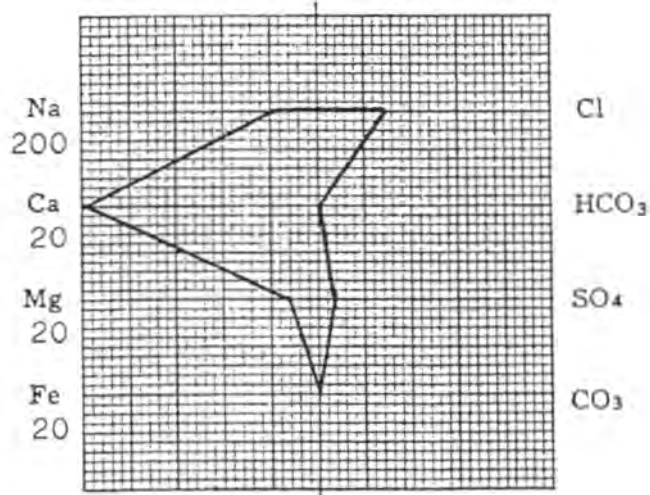
Field EAST POPLAR UNIT County ROOSEVELT State MONTANA
 Well No. 101 Location SW NW 14-28N-51E
 Formation FAST ZONE Depths 6173-6181'
 Operator MURPHY CORPORATION Date Sampled 12-2-57
 DST No. Sample PRODUCTION THROUGH PERFORATIONS Date Analyzed 12-9-57
 Other Data SAMPLE CLEAR LIGHT GREEN COLORED WATER.

Constituents	PPM	MEQ.	MEQ. %	Total Solids in Parts per Million
Sodium	21,996	956.76	31.50	By evaporation <u>88,800</u>
Calcium	9898	493.91	16.26	After ignition <u>86,600</u>
Magnesium	826	67.90	2.24	Calculated <u>86,904</u>
Sulfate	1364	28.37	0.93	pH <u>5.9</u>
Chloride	52,687	1485.77	48.93	Specific Gravity @ 60°F <u>1.068</u>
Carbonate	0	0	0	Resistivity @ 68°F
Bicarbonate	270	4.43	0.15	ohms/meter ³ <u>0.10</u>
Chloride as NaCl	<u>86,880</u>	PPM.	Total Solids From Resistivity as NaCl	<u>86,493</u> PPM.

NOTE: Sodium and potassium reported as sodium. MEQ.=milliequivalents per liter. PPM=parts per million (milligrams per liter). 1 PPM equivalent to 0.0001%

WATER ANALYSIS PATTERN

Scale MEQ. Per Unit



PRODUCTION &
INJECTION DATA

SURFACE EQUIPMENT

PLUGGING &
ABANDONMENT